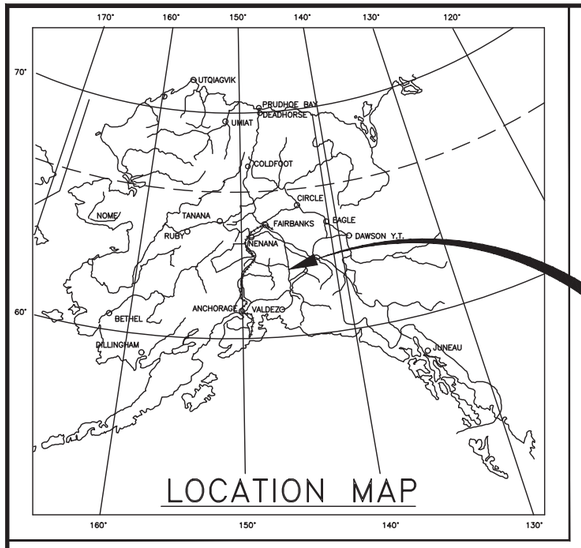
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	A1	67
CDS ROUTE: 190000	MILEPOINT: 169.971 TO 176.042			



STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES

PROPOSED HIGHWAY PROJECT

0713010/Z631860000

RICHARDSON HIGHWAY MP 167–173 RECONSTRUCTION

GRADING, DRAINAGE AND PAVING

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
A1	TITLE SHEET
A2–A3	LEGEND & SHEET LAYOUT INDEX
B1–B4	TYPICAL SECTIONS
C1–C2	ESTIMATE OF QUANTITIES & GENERAL NOTES
D1	SUPERELEVATION SUMMARY TABLE
E1–E8	DETAILS & SUMMARIES
F1–F14	PLAN & PROFILE
G1–G4	APPROACH SUMMARY & DETAILS
H1–H2	SIGNING & STRIPING
Q1–Q8	EROSION AND SEDIMENT CONTROL PLAN
T1	TEMPORARY TRAFFIC CONTROL PLAN
V1–V20	STANDARD DRAWINGS

THE FOLLOWING STANDARD PLANS APPLY TO THIS PROJECT:
C–04.12
D–01.02, D–04.22
G–00.05, G–05.11S, G–10.20, G–20.12
I–81.00
S–00.12, S–01.02, S–05.02, S–30.05
T–21.04

DESIGN DESIGNATIONS	
ADT (2008)	475
ADT (2045)	990
DHV	17.5%
PERCENT TRUCKS (T)	26%
DIRECTIONAL SPLIT (D)	40/60
DESIGN SPEED (V)	70 MPH
DESIGN EAL'S (25 YEARS)	479,529

PROJECT SUMMARY	
WIDTH OF PAVEMENT	36 FT
LENGTH OF GRADING	31,000 FT
LENGTH OF PAVING	31,000 FT
LENGTH OF PROJECT	31,000 FT

RUSSELL JOHNSON, P.E., PROJECT MANAGER

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES

APPROVED BY:

_____ DATE _____

Sarah E. Schacher, P.E.
Preconstruction Engineer, Northern Region

ACCEPTED FOR CONSTRUCTION:

_____ DATE _____

Joseph P. Kemp, P.E.
Regional Director, Northern Region

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644–2000 CERT. OF AUTH. NO. AECC569
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NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	A2	A3

	RECOVERED	SET
BLM MONUMENT		
GLO MONUMENT		
USC&GS MONUMENT		
PRIMARY MONUMENT		
CENTERLINE MONUMENT IN CASING		
PRIMARY R.O.W. MONUMENT		
BEARING OBJECT		
MISCELLANEOUS MONUMENT		
LINE OF SIGHT MONUMENT		
CONCRETE R.O.W. MONUMENT		
BENCHMARK		BM
REBAR AND CAP		
REBAR		
IRON PIPE		
PK NAIL		
SPIKE		
HUB AND TACK		

CONSTRUCTION CENTERLINE 5+00

MISCELLANEOUS CENTERLINE 10+00

STATION EQUATION "L"48+97.23 POT BK= "O"48+97.23 PC AHD

PROJECT RIGHT-OF-WAY LINE R/W

EXISTING RIGHT-OF-WAY LINE

EXISTING PROPERTY LINE

CONTROLLED ACCESS LINE C/A

UTILITY EASEMENT LINE PUE

TEMPORARY EASEMENT LINE (TCP OR TCE) TCP

ACCESS OR SECTION LINE EASEMENT ACCESS EASEMENT

PROPOSED CUT SLOPE LIMIT

PROPOSED FILL SLOPE LIMIT

SECTION LINE

1/4 SECTION LINE

1/16 SECTION LINE

TOWNSHIP & RANGE LINE T. 2 N. / T. 1 N. ; T. 1 E. ; T. 2 E.

	EXISTING	PROPOSED
SANITARY SEWER (FLOW DIRECTION →)	SS	SS
FUEL LINE	O	O
GAS LINE	G	G
WATER LINE	W	W
METER, VALVE, FIRE HYDRANT	W	W
EXISTING STORM DRAIN (FLOW DIRECTION →)	SD	
PROPOSED STORM DRAIN		S-10, S-11, P-11, P-10, MH
FIBER OPTIC LINE	FO	
DIRECT BURIAL TELEPHONE CABLE	T	T
DIRECT BURIAL ELECTRIC CABLE	E	E
ELECTRIC LINE (OVERHEAD)		
POWER POLE LINE		
JOINT USE POWER & TELEPHONE		
TELEPHONE POLE LINE		
POLE ANCHOR		
STUB POLE (POWER OR TELEPHONE)		
TELEPHONE DUCT	T	T
TELEPHONE PEDESTAL		
BURIED CABLE MARKER		
PIPELINE MARKER OR VALVE		
CATCH BASIN OR DROP INLET		
MANHOLE	MH	MH
SANITARY SEWER CLEAN OUT		

	EXISTING	PROPOSED
ROADWAY/PAVEMENT EDGE		
FENCE		
CURB AND GUTTER		
DETECTABLE WARNINGS		
GUARDRAIL		
CULVERT PIPE		
SIGN		
MAILBOX	MB	MB
RAILROAD TRACKS		
RAILROAD DEVICES	CROSS-BUCK, FLASHING LIGHT	CANTILEVER, SWITCH
TREE LINE		
WATER BOUNDARY		
ORDINARY HIGH WATER LINE		
FLOW CENTERLINE		
FLOW DIRECTION		
WETLANDS		
EXISTING BUILDINGS	H	H = HOUSE, G = GARAGE, M = MERCHANT/STORE, B = BARN, S = SHED, P = PRIVY, SS= SERVICE STATION, W = WAREHOUSE
POST OR BOLLARD		
WELL OR MONITORING WELL	W	
SEPTIC PIPE	S, VW	
FUEL TANK FILL PIPE/VENT	P	
SATELLITE DISH	SAT. DISH	
TEST HOLE	TH	
CONIFER TREE		
DECIDUOUS TREE		
GRAVE		
THERMOSIPHON		
PARKING METER		
VEHICLE PLUG-IN		
DELINEATOR/GUIDE MARKER		

	EXISTING	PROPOSED
JUNCTION BOX, TYPE IA		5
JUNCTION BOX, TYPE II		6
JUNCTION BOX, TYPE III		3
SIGNAL FACE, VEHICULAR	42	42
SIGNAL FACE, BACKPLATE	42	42
SIGNAL FACE, LEFT TURN, BACKPLATE	43	43
SIGNAL FACE, PEDESTRIAN		
LOOP DETECTOR	33	73
VIDEO DETECTOR	2	2
RADAR DETECTOR	4	4A
OPTICOM DETECTOR	1	1
PEDESTRIAN PUSH BUTTON	1	1
SIGNAL POST W/O MAST ARM		1
SIGNAL POLE W/MAST ARM		4
SIGNAL CONTROLLER		
LOAD CENTER		
LUMINAIRE		2
RIGID METAL CONDUIT		

LEGEND

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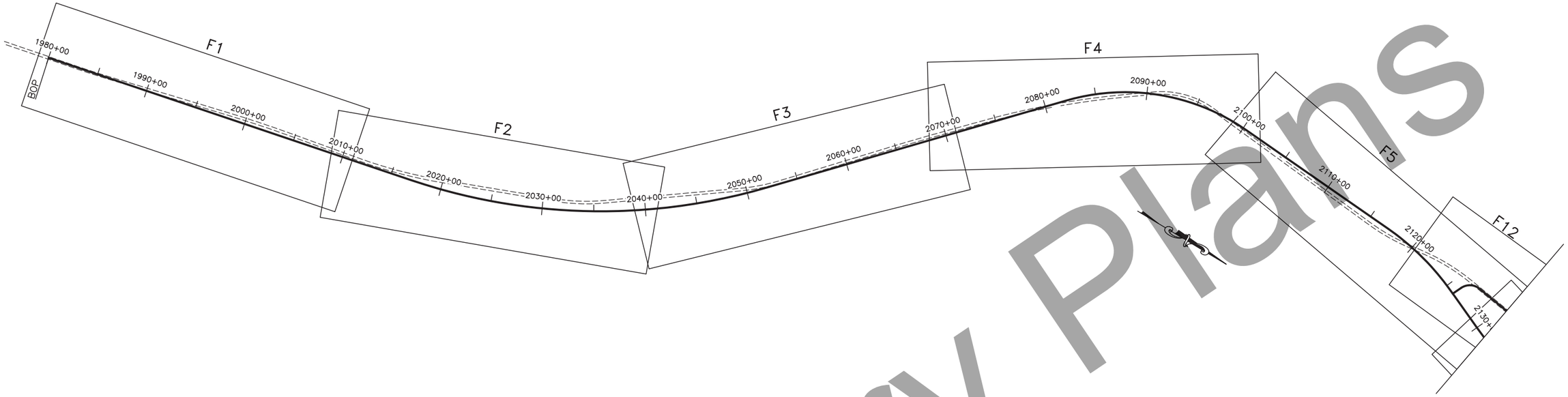
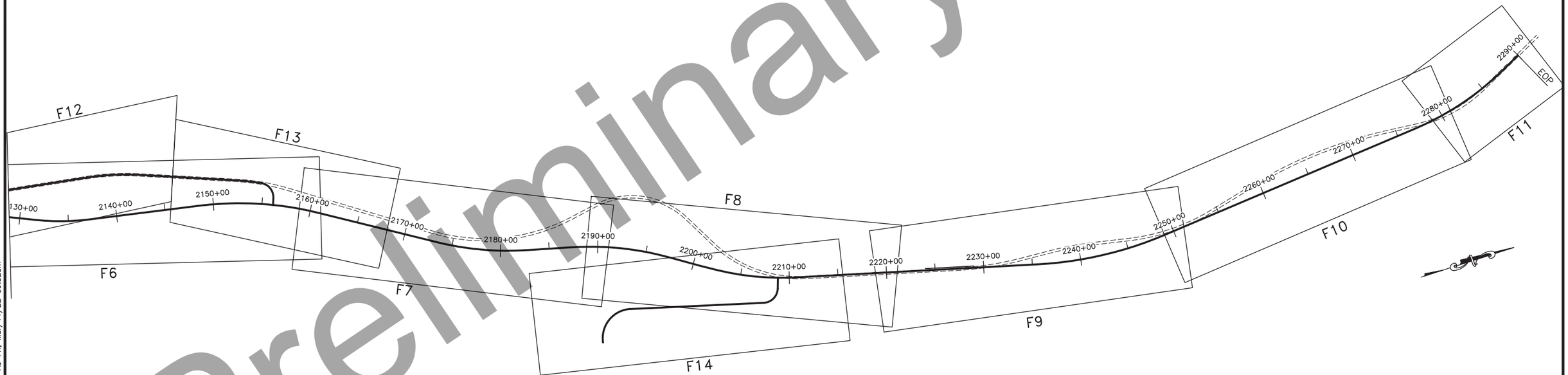
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	A3	A3





SHEET LAYOUT NOTES:

1. SEE SHEET F1 FOR NORTHING AND EASTING COORDINATES TO LOCATE THE BEGINNING OF RICHARDSON HIGHWAY CENTERLINE ALIGNMENT.
2. HORIZONTAL COORDINATE SYSTEM AND VERTICAL DATUM ARE BASED ON RECORD OF SURVEY DRAWING DATED 08/06/2013.

SHEET LAYOUT

STATE OF ALASKA 49TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
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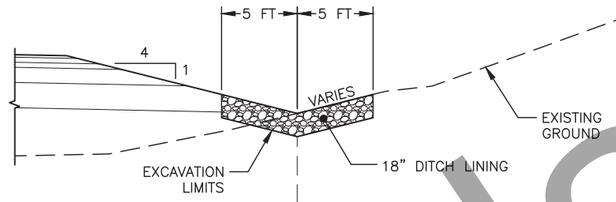
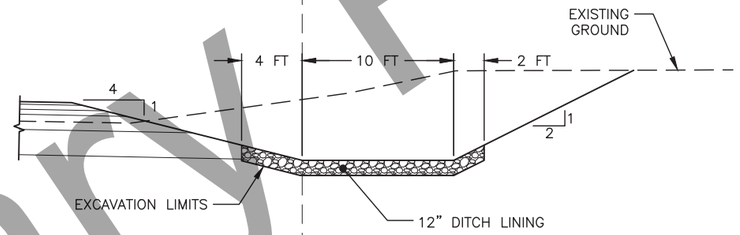
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	B1	B4



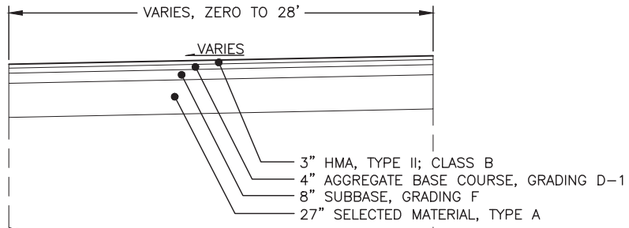
FILL DITCH LINING

STATION "01" 2183+60 TO STATION "01" 2188+75 RT

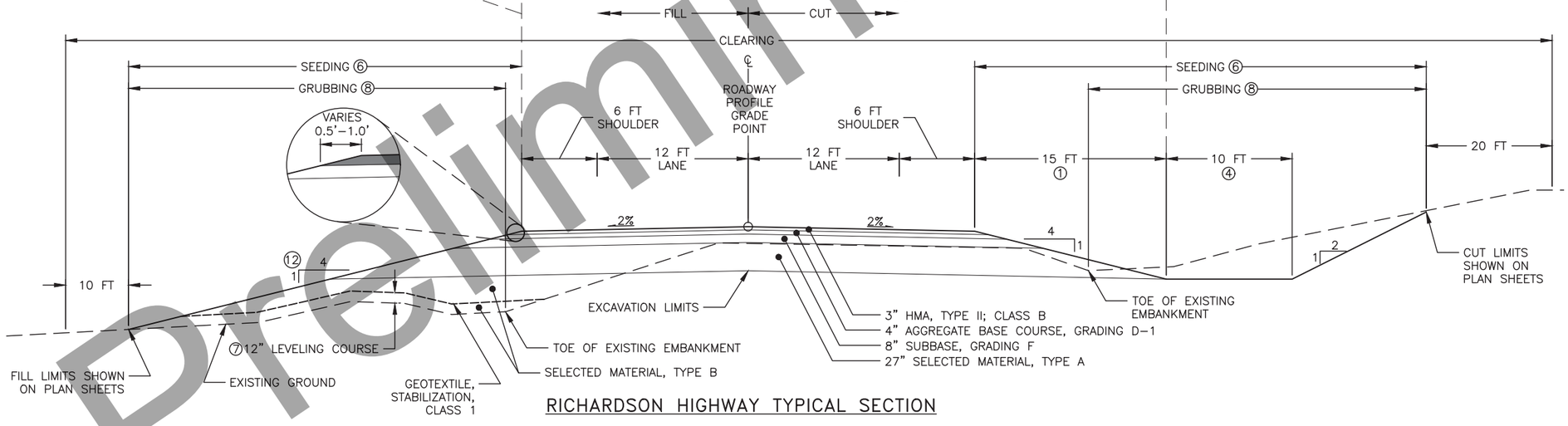


CUT DITCH LINING

STATION "01" 2217+75 TO STATION "01" 2242+00 RT



TURNOUTS (11)



RICHARDSON HIGHWAY TYPICAL SECTION

STATION "01" 1980+00 TO STATION "01" 2135+00
STATION "01" 2155+00 TO STATION "01" 2179+00
STATION "01" 2207+00 TO STATION "01" 2290+00

TYPICAL SECTION SHEET NOTES:

(1) CROSS SLOPE OF THE BOTTOM OF THE STRUCTURAL SECTION SHALL MATCH PAVEMENT CROSS SLOPE. IN AREAS OF SUPERELEVATION, ADJUST FORESLOPE WIDTH SO THAT DITCH ELEVATION MATCHES THE INTERSECTION OF THE FORESLOPE AND BOTTOM OF SELECTED MATERIAL, TYPE A.

2. THE ROADWAY PROFILE GRADE POINT IS AT THE TOP OF HMA, TYPE II; CLASS B.

3. TRANSITION THE TYPICAL SECTION, STRUCTURAL SECTION, AND LANE WIDTHS TO THE EXISTING ROADWAY GEOMETRY OVER THE FIRST AND LAST 100 FEET OF THE PROJECT LENGTH.

(4) IF DAYLIGHT OCCURS BEFORE A 10' WIDE DITCH IS ESTABLISHED GRADE TO DRAIN AWAY FROM THE ROAD AT 20H:1V.

5. FOR LOCATIONS WHERE GUARDRAIL IS REQUIRED, SEE GUARDRAIL WIDENING DETAIL ON SHEET E8.

(6) SEED ALL DISTURBED FORESLOPES, TRANSVERSE SLOPES, DITCHES AND BACKSLOPES IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 618, EXCEPT IN LOCATIONS WHERE RIPRAP, DITCH LINING OR ROCK BLANKET IS INSTALLED. UP TO 25 FEET BEYOND THE ENDS OF CULVERT INSTALLATIONS MAY BE UTILIZED FOR NECESSARY CONSTRUCTION ACTIVITIES; SEED AND STABILIZE TEMPORARY AREAS IMPACTED BY CONSTRUCTION. THIS WORK WILL BE SUBSIDIARY TO PAY ITEM 618.0002.0000.

(7) PROOF ROLL BASE OF EXCAVATION WHERE NEW EMBANKMENT AND APPROACHES CROSS PREVIOUSLY UNDISTURBED GROUND PRIOR TO PLACING NEW MATERIAL ACCORDING TO SUBSECTION 203-3.05. OMIT PROOF ROLLING TO PREVENT LIQUEFACTION OF SURFACE SOILS WHEN APPROVED BY THE ENGINEER.

(8) GRUBBING LIMITS SHALL BE FROM THE TOE OF EXISTING ROADWAY EMBANKMENT TO PROPOSED ROADWAY CATCH LIMITS.

9. REDUCE CLEARING WIDTH(S) AS NEEDED TO KEEP CLEARING LIMITS WITHIN EXISTING RIGHT-OF-WAY.

10. ALL LABOR, EQUIPMENT, STAGING, STOCKPILING, DOUBLE HAULING, AND COMPACTION REQUIRED TO CONSTRUCT ROADWAY IS SUBSIDIARY TO PAY ITEM 203.0003.0000.

(11) SEE SHEET G4 FOR TURNOUT GRADING PLANS.

(12) 2H:1V IN GUARDRAIL LOCATIONS. SEE SHEET E8

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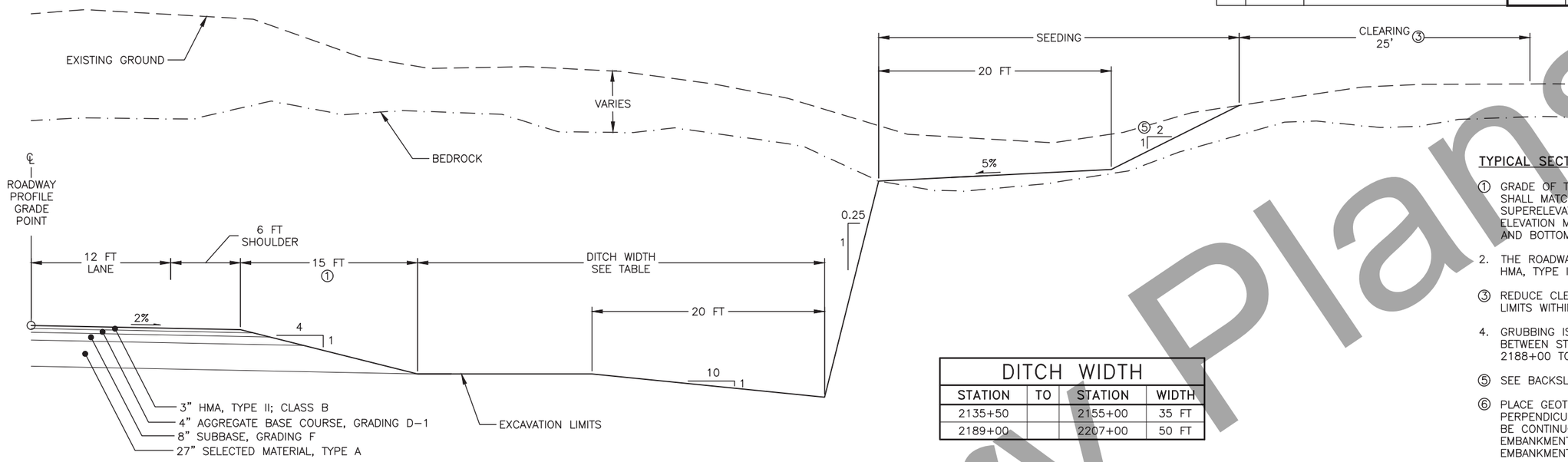
STATE OF ALASKA 49TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

TYPICAL SECTION (1 OF 4)

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	B2	B4



RICHARDSON HIGHWAY ROCK CUT TYPICAL SECTION

APPLIES TO BOTH SIDES OF THE ROAD
STATION "01" 2135+50 TO STATION "01" 2155+00
STATION "01" 2189+00 TO STATION "01" 2207+00

DITCH WIDTH			
STATION	TO	STATION	WIDTH
2135+50		2155+00	35 FT
2189+00		2207+00	50 FT

TYPICAL SECTION SHEET NOTES:

① GRADE OF THE BOTTOM OF THE STRUCTURAL SECTION SHALL MATCH PAVEMENT GRADE. IN AREAS OF SUPERELEVATION, ADJUST FORESLOPE WIDTH SO THAT DITCH ELEVATION MATCHES THE INTERSECTION OF THE FORESLOPE AND BOTTOM OF SELECTED MATERIAL, TYPE A.

2. THE ROADWAY PROFILE GRADE POINT IS AT THE TOP OF HMA, TYPE II; CLASS B.

③ REDUCE CLEARING WIDTH AS NEEDED TO KEEP CLEARING LIMITS WITHIN THE EXISTING RIGHT–OF–WAY.

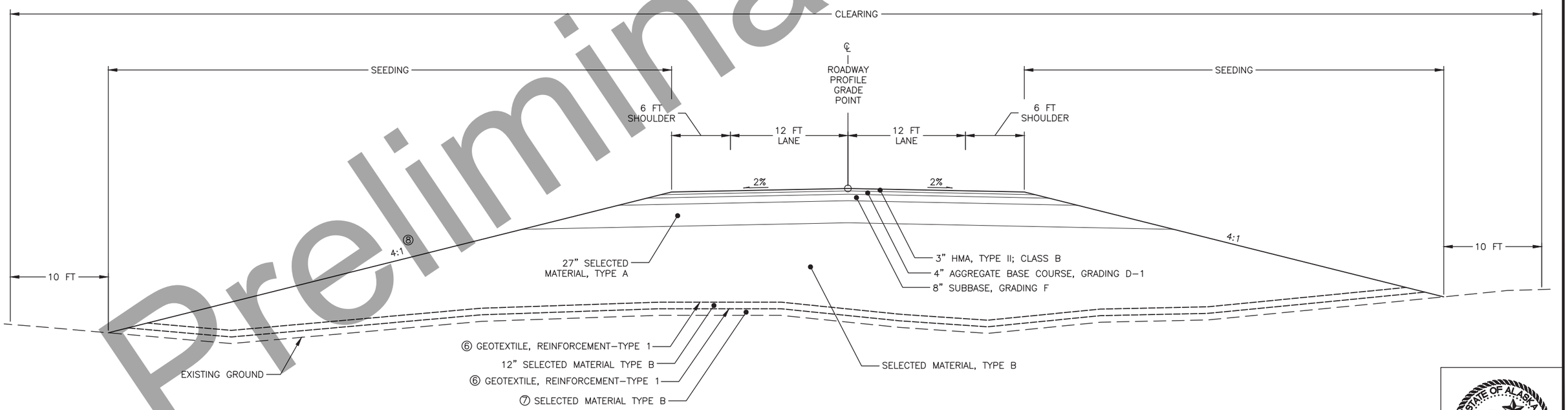
4. GRUBBING IS SUBSIDIARY TO PAY ITEM 203.0003.0000 BETWEEN STATIONS 2135+50 AND 2155+00 AND STATIONS 2188+00 TO 2207+00.

⑤ SEE BACKSLOPE STABILIZATION DETAIL ON SHEET B3.

⑥ PLACE GEOTEXTILE, REINFORCEMENT–TYPE 1 PERPENDICULAR TO THE EMBANKMENT CENTERLINE. SHALL BE CONTINUOUS FROM SIDE OF EMBANKMENT TO SIDE OF EMBANKMENT, WITH NO SEAMS ALLOWED PARALLEL TO THE EMBANKMENT CENTERLINE.

⑦ MINIMUM THICKNESS TO SUPPORT HAULING EQUIPMENT, SEE SPECIFICATION SECTION 203–3.03.

⑧ 2H:1V IN GUARDRAIL LOCATIONS. SEE SHEET E8



RICHARDSON HIGHWAY HIGH FILL TYPICAL SECTION

STATION "01" 2179+00 TO STATION "01" 2189+00

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STATE OF ALASKA 49TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

TYPICAL SECTION (2 OF 4)

NO.	DATE	REVISION

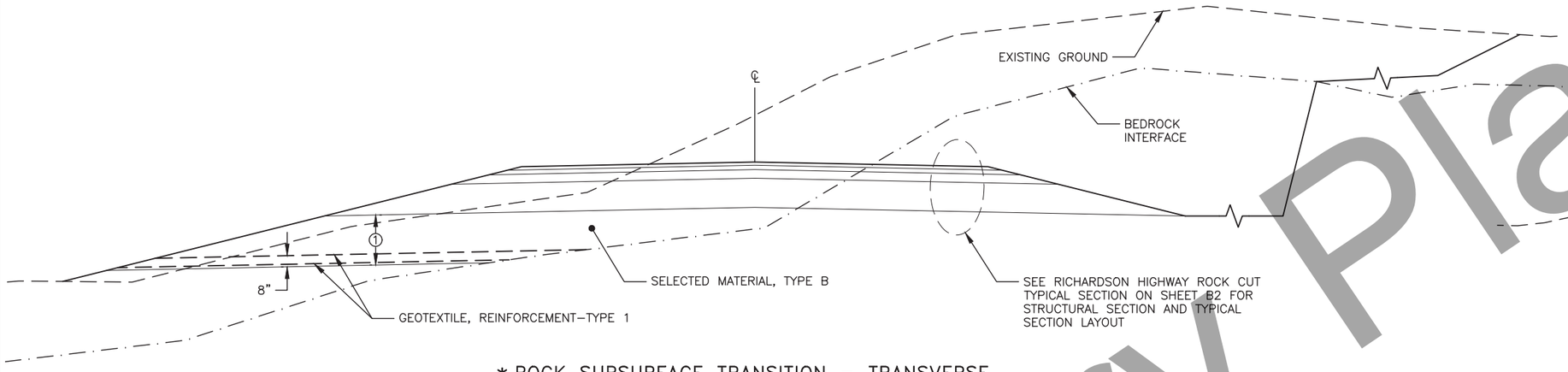
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	B3	B4

TYPICAL SECTION SHEET NOTES:

① EXTEND EXCAVATION DOWN TO HARD SURFACE OR 5 FEET, WHICHEVER IS LESS. CONFIRM EXCAVATION LESS THAN 5 FEET WITH THE ENGINEER.

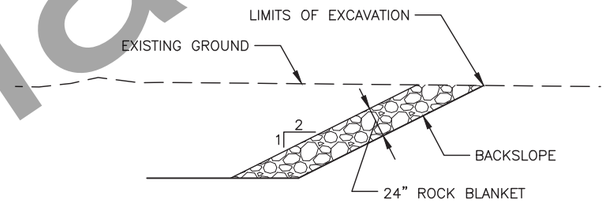
2. WHERE DITCH LINING AND BACKSLOPE STABILIZATION OCCUR AT THE SAME LOCATION DITCH LINING TO BE CONSTRUCTED PRIOR TO BACKSLOPE STABILIZATION.

③ VERIFY LOCATIONS WITH THE ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK. ALL WORK AND MATERIAL REQUIRED IS SUBSIDIARY TO PAY ITEM 203.0003.0000.



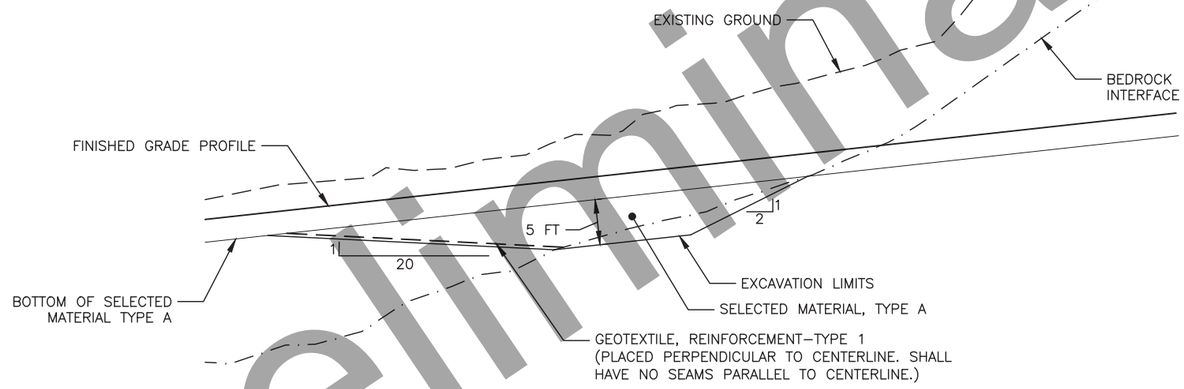
* ROCK SUBSURFACE TRANSITION – TRANSVERSE

STATION "01" 2144+50 TO STATION "01" 2153+50
STATION "01" 2202+00 TO STATION "01" 2203+00



* BACKSLOPE STABILIZATION

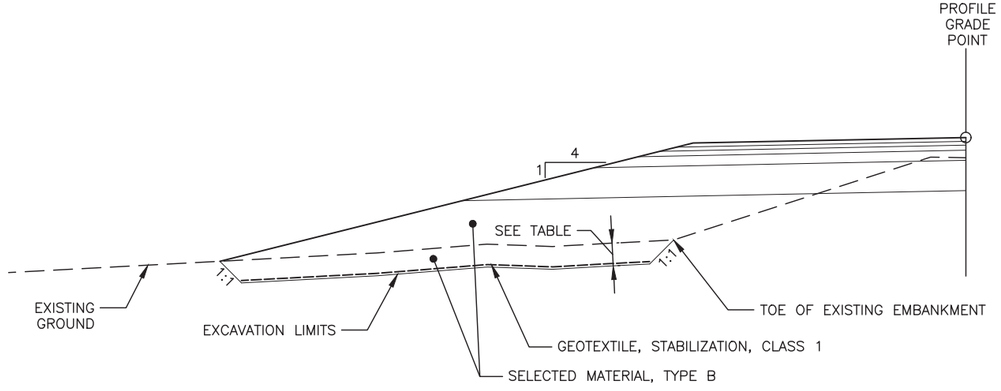
STATION "01" 2116+00 LT/RT TO STATION "01" 2120+00 LT/RT
STATION "01" 2189+00 LT/RT TO STATION "01" 2203+00 LT/RT
STATION "01" 2240+00 LT/RT TO STATION "01" 2243+00 LT/RT



* ROCK SUBSURFACE TRANSITION – LONGITUDINAL

STATION "01" 2136+00 TO STATION "01" 2138+00
STATION "01" 2153+00 TO STATION "01" 2155+00
STATION "01" 2189+00 TO STATION "01" 2191+00
STATION "01" 2202+00 TO STATION "01" 2204+00

* ADJUST BEGINNING AND END STATIONS AS DIRECTED BY THE ENGINEER



OVER EXCAVATION DETAIL ③

APPLIES TO BOTH SIDES OF ROAD UNLESS OTHERWISE INDICATED

OVER EXCAVATION TABLE				
STATION	TO	STATION	12 INCH	24 INCH
1980+00		2136+50	X	
2153+50		2179+00		X

TYPICAL SECTION (3 OF 4)

STATE OF ALASKA 49TH
AUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

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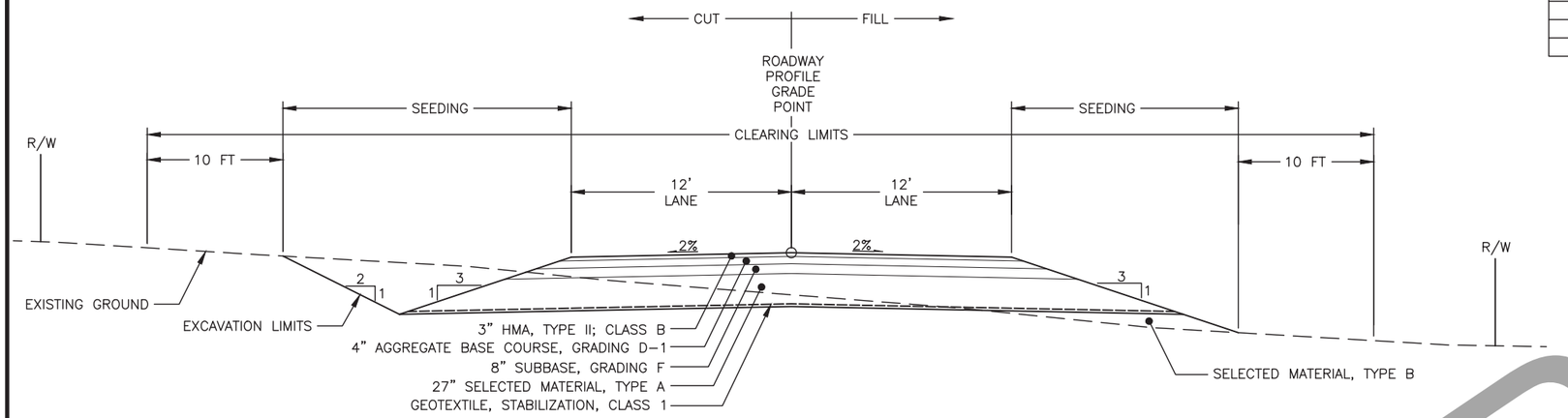
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	B4	B4



MEIERS LAKE LOOP RD – TYPICAL 1

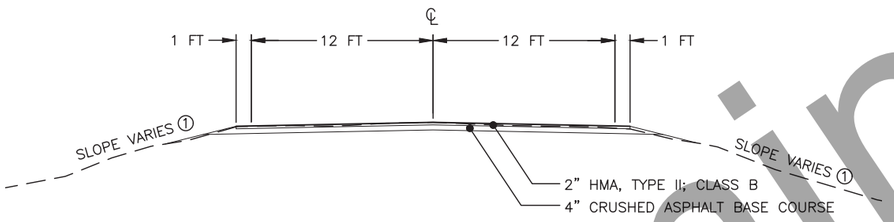
STATION "LR" 10+18 TO STATION "LR" 13+50
STATION "LR" 35+45 TO STATION "LR" 43+20

TYPICAL SECTION SHEET NOTES:

① SLOPE VARIES, MATCH TO EXISTING EMBANKMENT SLOPE. DO NOT EXCEED 2H:1V SLOPE.

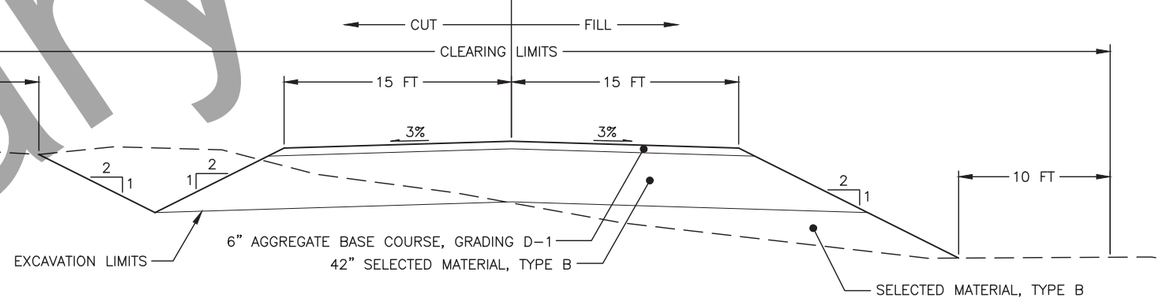
② FROM STA 13+50 TO STA 35+45 MEIERS LAKE LOOP RD HAS NO DESIGN PROFILE. SHAPE AND GRADE THE CRUSHED ASPHALT BASE COURSE ACCORDING TO SPECIFICATION 308–3.03.

③ PROOF ROLL LEVELING COURSE AND PLACE GEOTEXTILE, STABILIZATION, CLASS 1 ON TOP OF 12" OF SELECTED MATERIAL, TYPE B OVER PREVIOUSLY UNDISTURBED AREAS.



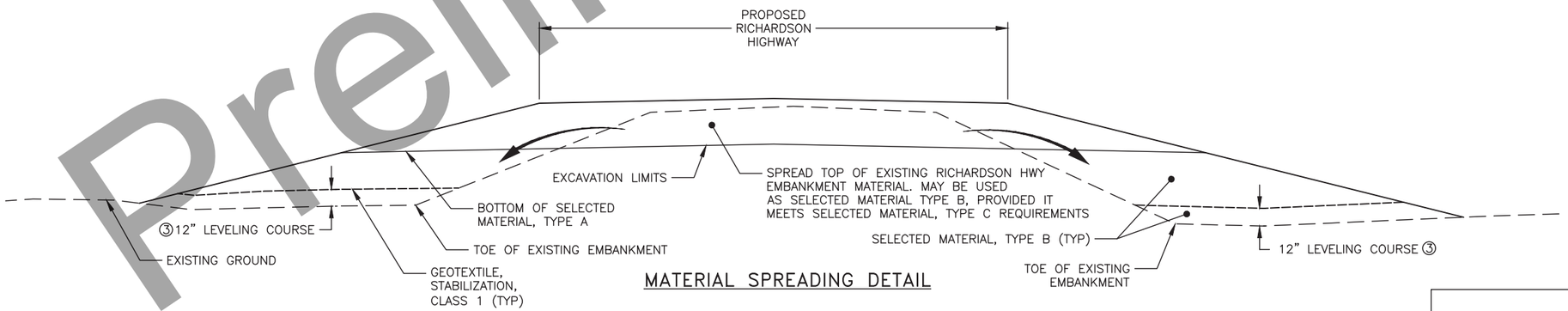
MEIERS LAKE LOOP RD – TYPICAL 2

STATION "LR" 13+50 TO STATION "LR" 35+45 ②

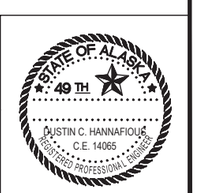


TEMPORARY ACCESS ROAD TYPICAL SECTION

STATION "TA" 00+00 TO STATION "TA" 21+54



MATERIAL SPREADING DETAIL



TYPICAL SECTION (4 OF 4)

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NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	C1	C2

ESTIMATE OF QUANTITIES

ITEM NO.	PAY ITEM	PAY UNIT	QUANTITY
201.0003.0000	CLEARING AND GRUBBING	ACRE	80
202.0002.0000	REMOVAL OF PAVEMENT	SY	209,800
202.0017.0000	REMOVAL OF CULVERT PIPE	EACH	30
203.0002.0000	ROCK EXCAVATION	CUBIC YARD	434,100
203.0003.0000	UNCLASSIFIED EXCAVATION	CUBIC YARD	360,000
203.0009.0000	OBLITERATION OF ROADWAY	SQUARE YARD	5,500
203.0010.0000	CONTROLLED BLASTING	LF	4,440
203.2036.0000	TEMPORARY ACCESS	LUMP SUM	ALL REQ'D
301.0001.00D1	AGGREGATE BASE COURSE, GRADING D-1	TON	31,200
304.0001.000F	SUBBASE, GRADING F	TON	69,200
308.0001.0000	CRUSHED ASPHALT BASE COURSE	SY	6,350
401.0001.002B	HMA, TYPE II; CLASS B	TON	22,900
401.0004.5240	ASPHALT BINDER, GRADE PG 52-40	TON	1,380
401.0008.002B	HMA PRICE ADJUSTMENT, TYPE II; CLASS B	CONTINGENT SUM	ALL REQ'D
401.0009.0000	LONGITUDINAL JOINT DENSITY PRICE ADJUSTMENT	CONTINGENT SUM	ALL REQ'D
401.0010.0001	PAVEMENT SMOOTHNESS PRICE ADJUSTMENT, METHOD 1	CONTINGENT SUM	ALL REQ'D
401.0012.002B	HMA, DRIVEWAY, TYPE II; CLASS B	TON	300
401.0013.0000	JOB MIX DESIGN	EACH	1
401.0015.0000	ASPHALT MATERIAL PRICE ADJUSTMENT	CONTINGENT SUM	ALL REQ'D
406.0001.0000	RUMBLE STRIPS	LUMP SUM	ALL REQ'D
602.0002.0152	152x97 INCH CSP ARCH	LINEAR FOOT	86
603.0001.0024	CSP 24 INCH	LINEAR FOOT	36
603.0001.0036	CSP 36 INCH	LINEAR FOOT	2980
603.0001.0048	CSP 48 INCH	LINEAR FOOT	256
603.0002.0152	152x97 INCH CSP ARCH	LINEAR FOOT	86
606.0001.0000	W-BEAM GUARDRAIL	LINEAR FOOT	1,650
606.0013.0000	PARALLEL GUARDRAIL TERMINAL	EACH	2
610.0001.0000	DITCH LINING	CUBIC YARD	2,100
611.0001.0001	RIPRAP, CLASS I	CUBIC YARD	900
613.0002.0000	CULVERT MARKER POST	EACH	56
615.0001.0000	STANDARD SIGN	SQUARE FOOT	158.15
616.0002.0050	THAW PIPE 1/2 INCH DIAMETER	EACH	1
618.0002.0000	SEEDING	POUND	2,800
628.2000.0000	FISH PASSAGE SUBSTRATE	LUMP SUM	ALL REQ'D
630.0002.0001	GEOTEXTILE, STABILIZATION, CLASS 1	SQUARE YARD	37,800
630.0003.0001	GEOTEXTILE, REINFORCEMENT-TYPE 1	SQUARE YARD	46,300
631.0003.0001	GEOTEXTILE, EROSION CONTROL, CLASS 1	SQUARE YARD	170
639.2000.0000	APPROACH	EACH	7
640.0001.0000	MOBILIZATION AND DEMOBILIZATION	LUMP SUM	ALL REQ'D
640.0004.0000	WORKER MEALS AND LODGING, OR PER DIEM	LUMP SUM	ALL REQ'D
641.0001.0000	EROSION, SEDIMENT AND POLLUTION CONTROL ADMINISTRATION	LUMP SUM	ALL REQ'D
641.0003.0000	TEMPORARY EROSION, SEDIMENT AND POLLUTION CONTROL	LUMP SUM	ALL REQ'D
641.0005.0000	TEMPORARY EROSION, SEDIMENT AND POLLUTION CONTROL BY DIRECTIVE	CONTINGENT SUM	ALL REQ'D
641.0006.0000	WITHHOLDING	CONTINGENT SUM	ALL REQ'D
641.0007.0000	SWPPP MANAGER	LUMP SUM	ALL REQ'D
641.2001.0000	ROCK BLANKET	CUBIC YARD	2,760

ESTIMATE OF QUANTITIES

ITEM NO.	PAY ITEM	PAY UNIT	QUANTITY
642.0001.0000	CONSTRUCTION SURVEYING	LUMP SUM	ALL REQ'D
642.0013.0000	THREE PERSON SURVEY PARTY	CONTINGENT SUM	ALL REQ'D
642.2002.0000	CONTRACTOR-FURNISHED CROSS SECTIONS	LUMP SUM	ALL REQ'D
643.0002.0000	TRAFFIC MAINTENANCE	LUMP SUM	ALL REQ'D
643.0023.0000	TRAFFIC PRICE ADJUSTMENT	CONTINGENT SUM	ALL REQ'D
643.0025.0000	TRAFFIC CONTROL	CONTINGENT SUM	ALL REQ'D
644.0001.0000	FIELD OFFICE	LUMP SUM	ALL REQ'D
644.0002.0000	FIELD LABORATORY	LUMP SUM	ALL REQ'D
644.0003.0000	CURING SHED	LUMP SUM	ALL REQ'D
644.0006.0000	VEHICLE	LUMP SUM	ALL REQ'D
644.0015.0000	NUCLEAR TESTING EQUIPMENT STORAGE SHED	EACH	1
645.0001.0000	TRAINING PROGRAM, 3 TRAINEES/APPRENTICES	LABOR HOUR	1,500
646.0001.0000	CPM SCHEDULING	LUMP SUM	ALL REQ'D
670.0001.0000	PAINTED TRAFFIC MARKINGS	LUMP SUM	ALL REQ'D

TABLE OF ESTIMATING FACTORS

ITEM NO.	DESCRIPTION	FACTOR	UNITS
301.0001.00D1	AGGREGATE BASE COURSE, GRADING D-1	2	TONS/CUBIC YARD
304.0001.000F	SUBBASE, GRADING F	2	TONS/CUBIC YARD
401.0001.002B	ASPHALT CONCRETE, TYPE II, CLASS B	115	POUNDS/SQUARE YARD/INCH
401.0004.5240	ASPHALT BINDER, GRADE PG 52-40	0.06	TOTAL WEIGHT OF MIX
401.0012.002B	HMA, DRIVEWAY, TYPE II; CLASS B	115	POUNDS/SQUARE YARD/INCH
610.0001.0000	DITCH LINING	1.7	TONS/CUBIC YARD
611.0001.0001	RIPRAP, CLASS I	1.7	TONS/CUBIC YARD
618.0002.0000	SEEDING	1.0	POUNDS/1000 SQUARE FEET

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
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ESTIMATE OF QUANTITIES

STATE OF ALASKA
49 TH
AUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	C2	C2

GENERAL NOTES:

1. GRADES AND ALIGNMENTS SHOWN ON THESE PLANS ARE SUBJECT TO MINOR REVISIONS BY THE ENGINEER.
2. THE CENTERLINE IS THE POINT OF SUPERELEVATION ROTATION.
3. THE CONTRACTOR SHALL ESTABLISH PASS / NO PASS ZONES IN ACCORDANCE WITH SECTION 670 SPECIAL PROVISION.
4. QUANTITIES ARE BASED ON IN PLACE (BANK CUT) VOLUMES PRIOR TO EXCAVATION AND ARE NOT ADJUSTED FOR SHRINK OR SWELL. IT IS ASSUMED ROCK EXCAVATION QUANTITY WILL SWELL 25% AFTER BLASTING.
5. EXPECT ZONES OF BEDROCK AND LARGE BOULDERS TO REQUIRE BLASTING.
6. SEED ALL DISTRIBUTED AREAS AS DIRECTED BY THE ENGINEER. SEEDING MAY REQUIRE SEVERAL MOBILIZATIONS. ALL MOBILIZATIONS ARE SUBSIDIARY TO PAY ITEM 618.002.0000.
7. ICE MAY BE PRESENT IN CULVERTS. IF CULVERTS ARE REPLACED WHILE CONTAINING ICE, ICE REMOVAL IS SUBSIDIARY TO OTHER 202 AND 603 PAY ITEMS.
8. OBLITERATION OF ROADWAY INCLUDES THE REMOVAL AND DISPOSAL OF EXISTING ASPHALT CONCRETE PAVEMENT. THIS WORK IS SUBSIDIARY TO PAY ITEM 203.0009.0000.
9. EXISTING UTILITIES SHOWN ARE BASED ON A 2012 AND 2021 SURVEY. SOME UNDERGROUND UTILITIES HAVE BEEN RELOCATED AND/OR ABANDONED.

DRAINAGE NOTES:

1. REMOVED PIPE BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT THIS WORK IS SUBSIDIARY TO PAY ITEM 202.0017.0000.
2. STAKE CULVERT PIPES TO FIT FIELD CONDITIONS.
3. ALL CULVERT PIPE LENGTHS AND LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO ADJUSTMENTS AS DIRECTED BY THE ENGINEER.
4. DITCH CULVERT OUTLETS AND INLETS TO DRAIN AS NEEDED OR AS DIRECTED BY THE ENGINEER. THIS WORK IS SUBSIDIARY TO 603 PAY ITEMS.

SUMMARY OF PROJECT ALIGNMENTS

NAME	DESCRIPTIVE NAME	DESCRIPTION	REMARKS
"A1"	DRIVEWAY APPROACH 1		APPROACH CENTERLINE FOUND NEAR STATION "O" 2037+27
"A2"	DRIVEWAY APPROACH 2	MEIERS LAKE PIT	APPROACH CENTERLINE FOUND NEAR STATION "O" 2103+00
"A3"	DRIVEWAY APPROACH 3		APPROACH CENTERLINE FOUND NEAR STATION "O" 2117+90
"A4"	DRIVEWAY APPROACH 4		APPROACH CENTERLINE FOUND NEAR STATION "O" 2122+83
"A5"	DRIVEWAY APPROACH 5	ALYESKA PIPELINE ACCESS ROAD	APPROACH CENTERLINE FOUND NEAR STATION "O" 2208+82
"A6"	DRIVEWAY APPROACH 6	ALYESKA PIPELINE ACCESS ROAD	APPROACH CENTERLINE FOUND NEAR STATION "O" 2282+26
"A7"	DRIVEWAY APPROACH 7		APPROACH CENTERLINE FOUND NEAR STATION "O" 2282+40
"LR"	MEIERS LAKE LOOP ROAD		LOOP ROAD UTILIZING EXISTING HIGHWAY EMBANKMENT
"TA"	TEMPORARY ACCESS ROAD		TEMPORARY PIT ACCESS DURING CONSTRUCTION
"01"	"01" ALIGNMENT		PROPOSED DESIGN ALIGNMENT OF RICHARDSON HIGHWAY

LIST OF ABBREVIATIONS:

%	PERCENT
Δ	DELTA ANGLE
APPROX, ~	APPROXIMATELY
ADT	AVERAGE DAILY TRAFFIC
AH	AHEAD
ASDS	ALASKA SIGN DESIGN SUPPLEMENT
BFS	BEGIN FULL SUPER
BNC	BEGIN NORMAL CROWN
BOL	BEGINNING OF LINE
BOP	BEGINNING OF PROJECT
℄	CENTER LINE
CSP	CORRUGATED STEEL PIPE
D	DEGREE OF CURVATURE
DEG, °	DEGREE
DEMO	DEMOLISH
DIA.	DIAMETER
DHV	DESIGN HOURLY VOLUME
E	EAST
EAL	EQUIVALENT AXLE LOADING
EFS	END FULL SUPER
ELEV.	ELEVATION
ENC	END NORMAL CROWN
EOL	END OF LINE
EOP	END OF PROJECT
FT, '	FOOT
GALV.	GALVANIZED
H	HORIZONTAL
HMA	HOT MIX ASPHALT
IN, "	INCH
L	LENGTH OF CURVE
LC	LEVEL CROWN
LT	LEFT
LVC	LENGTH OF VERTICAL CURVE
MAX.	MAXIMUM
MIN.	MINIMUM
MP	MILEPOST
N	NORTH
NO., #	NUMBER
OG	ORIGINAL GRADE
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PST	PERFORATED STEEL POST
PT	POINT OF TANGENCY
R	RADIUS
RC	REVERSE CROWN
RT	RIGHT
R/W	RIGHT-OF-WAY
S	SOUTH
S	SUPERELEVATION
SQ	SQUARE
T	CURVE TANGENT LENGTH
TYP	TYPICAL
V	VERTICAL
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPT	VERTICAL POINT OF TANGENCY
W	WEST

STATE OF ALASKA 49TH
JUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

GENERAL NOTES

PLANS DEVELOPED BY: HDR ENGINEERING INC. 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
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NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	D1	D1

SUPERELEVATION SUMMARY

CURVE P.I.	RADIUS (FEET)	BEGIN TRANSITION	TRANSITION LENGTH(FEET)	CURVE P.C.	BEGIN FULL SUPERELEVATION	SUPERELEVATION RATE (%)	END FULL SUPERELEVATION	CURVE P.T.	TRANSITION LENGTH(FEET)	END TRANSITION	REMARKS
"01" 2035+00.04	5730	"01" 2015+65	160	"01" 2017+01.79	"01" 2017+25	3.4	"01" 2051+70	"01" 2051+86.74	160	"01" 2053+30	
"01" 2091+88.43	2050	"01" 2080+10	240	"01" 2082+10.47	"01" 2082+50	6.0	"01" 2100+00	"01" 2100+35.48	240	"01" 2102+40	
"01" 2121+27.82	2460	"01" 2115+10	235	"01" 2117+07.14	"01" 2117+45	5.8	"01" 2125+10	"01" 2125+40.43	230	"01" 2127+40	
"01" 2134+42.15	2460	"01" 2129+65	235	"01" 2131+62.35	"01" 2132+00	5.8	"01" 2136+85	"01" 2137+19.55	235	"01" 2139+20	
"01" 2154+75.90	3350	"01" 2146+80	210	"01" 2148+57.00	"01" 2148+90	5.0	"01" 2160+55	"01" 2160+80.99	210	"01" 2162+65	
"01" 2178+00.54	3000	"01" 2171+57	220	"01" 2173+43.79	"01" 2173+77	5.4	"01" 2182+18	"01" 2182+50.33	225	"01" 2184+43	
"01" 2192+35.76	3000	"01" 2185+65	220	"01" 2187+50.91	"01" 2187+85	5.4	"01" 2196+83	"01" 2197+12.29	220	"01" 2199+03	
"01" 2206+35.64	2800	"01" 2200+01	225	"01" 2201+92.07	"01" 2202+26	5.6	"01" 2210+40	"01" 2210+71.90	230	"01" 2212+70	
"01" 2242+36.51	3900	"01" 2233+83	200	"01" 2235+52.87	"01" 2235+83	4.6	"01" 2248+83	"01" 2249+06.41	195	"01" 2250+78	
"01" 2282+54.15	2900	"01" 2275+04	230	"01" 2276+97.22	"01" 2277+34	5.6	"01" 2287+69	"01" 2287+97.68	225	"01" 2289+94	

SUPERELEVATION NOTES:

1. CONSTRUCT SUPERELEVATIONS USING CASE #1 SHOWN ON SHEET V15.
2. SEE SHEET V15 FOR SUPERELEVATION TRANSITION DETAILS. THE TRANSITION LENGTHS GIVEN IN THE SUMMARY DO NOT INCLUDE THE 1/2 VERTICAL CURVE LENGTHS SHOWN ON EACH END OF THE TRANSITION.

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
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SUPERELEVATION SUMMARY

STATE OF ALASKA 49TH
JUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

CULVERT SUMMARY

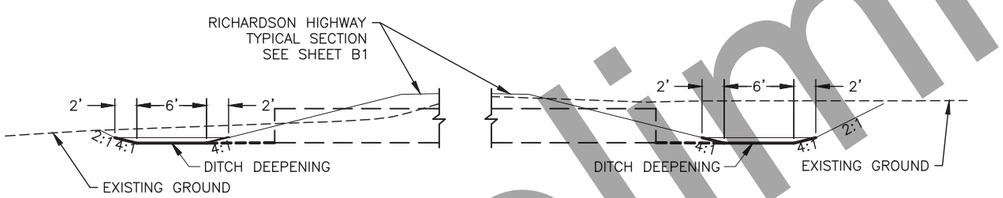
STATION	NEW PIPE LENGTH			613.0002.0000 MARKER POST	616.0002.0050 THAW PIPE	611.0001.0001 RIPRAP (CY)	DITCH DIKE	REMARKS	AS-BUILT CENTERLINE LOCATION (SEE NOTE 1)		
	603.0001.0024 24" CSP	603.0001.0036 36" CSP	603.0001.0048 48" CSP						STATION	LATITUDE	LONGITUDE
"01" 1995+50		60		X		25					
"01" 2013+76	GILLESPIE CREEK FISH PASSAGE CULVERT			X	X			SEE SHEET E6 FOR DETAILS			
"01" 2017+66		104		X		25					
"01" 2032+15		64		X		25	LT	GRADING DETAIL B LT			
"01" 2037+27	36			X		25					
"01" 2044+84		100		X		25					
"01" 2054+25		88		X		25					
"01" 2058+50		88		X		25					
"01" 2072+50		94		X		25					
"01" 2081+70		78		X		25					
"01" 2113+75		270		X		25					
"01" 2123+75		210		X		25					
"01" 2130+95			256	X		50					
"01" 2155+05		106		X		25	RT				
"01" 2171+44		116		X		25					
"01" 2183+66		160		X		25		SEE PIPE OUTLET GRADING DETAIL ON SHEET E5			
"01" 2205+26		76		X		25	RT				
"01" 2210+46		110		X		25					
"01" 2213+46		156		X		25					
"01" 2221+84		146		X		25	RT				
"01" 2228+24		112		X		25	RT	GRADING DETAIL B RT			
"01" 2235+15		84		X		25	RT	GRADING DETAIL B RT			
"01" 2244+52		64		X		25	RT	GRADING DETAIL A			
"01" 2249+77		90		X		25		GRADING DETAIL B RT			
"01" 2266+45		94		X		25		GRADING DETAIL B RT			
"01" 2272+25		100		X		25					
"01" 2281+61		92		X		25		GRADING DETAIL C RT			
"01" 2282+67		82		X		25		GRADING DETAIL C RT			
"LR" 51+52		114				19.5					
"LR" 81+60		122				19.5					
TOTAL	36	2980	256	56	1	739					

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	E1	E8

CULVERT NOTES:

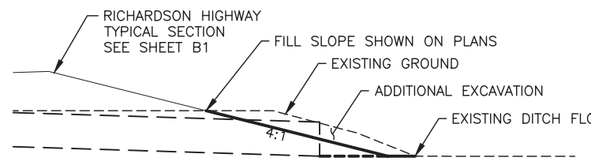
1. THE CONTRACTOR SHALL ENTER AS-BUILT LOCATIONS FOR ALL CULVERTS IN THE CULVERT SUMMARY TABLE. COORDINATES SHALL BE LOCATED AT THE INTERSECTION OF THE CULVERT AND ROAD CENTERLINE. USE WGS84 DATUM FORMATTED TO DECIMAL DEGREES TO A PRECISION OF 2 DECIMAL PLACES. THIS WORK IS SUBSIDIARY TO PAY ITEM 642.0001.0000.
2. ALL 36" AND LARGER CSP CULVERTS SHALL BE 10 GAUGE. ALL 24" CSP CULVERTS SHALL BE 14 GAUGE.
3. LOCATION AND LENGTH OF NEW CULVERTS ARE APPROXIMATE AND SHALL BE ADJUSTED TO FIT THE EXISTING OR PROPOSED DRAINAGE CHANNEL. INVERT ELEVATION TO BE APPROVED BY THE ENGINEER.
4. MINIMUM ALLOWABLE CULVERT CROSS SLOPE IS 0.5%.
5. ALL PIPES SHALL BE GALVANIZED. SEE SHEET E2 FOR CULVERT MARKER POST DETAILS.
6. SEE RIPRAP APRON DETAIL ON SHEET E4 FOR RIPRAP LAYOUT.
7. ALL CROSS CULVERT PIPES ARE PERPENDICULAR TO HIGHWAY CENTERLINE.



GRADING NOTES:

1. TRANSITION FROM MAINLINE TYPICAL SECTION TO DEEPENED DITCH DETAIL OVER 20 FEET MINIMUM. GRADE TRANSITION FROM DEEPENED DITCH TO NORMAL DITCH TO DRAIN WITH MINIMUM GRADE OF 0.5%.

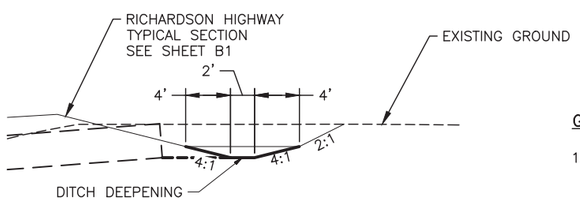
SPECIAL DITCH GRADING DETAIL A



GRADING NOTES:

1. EXTEND 4:1 FORESLOPE TO ELEVATION OF EXISTING DITCH, THEN LEVEL SLOPE TO DAYLIGHT. GRADING TO EXTEND 10 FEET EITHER SIDE OF PIPE CENTERLINE.

CULVERT END GRADING DETAIL C



GRADING NOTES:

1. TRANSITION FROM MAINLINE TYPICAL SECTION TO DEEPENED DITCH DETAIL OVER 20'. TRANSITION FROM DEEPENED DITCH DETAIL TO MAINLINE TYPICAL OVER 50 FEET DOWN STATION FROM CULVERT CENTERLINE.

SPECIAL DITCH GRADING DETAIL B

CULVERT DETAILS (1 OF 5)

STATE OF ALASKA 49TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC., 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
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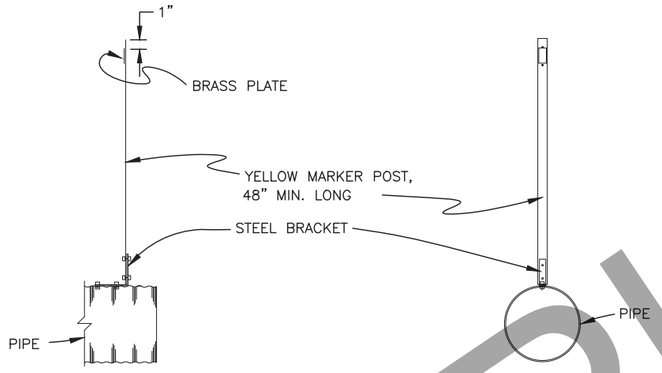
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	E2	E8

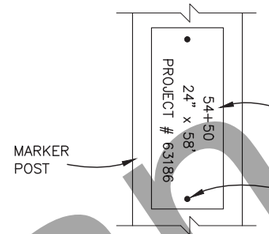
202.0017.0000
REMOVAL OF CULVERT PIPE

APPROXIMATE STATION	DESCRIPTION	REMARKS
"01" 1995+42		
"01" 2013+77	GILLESPIE CREEK	
"01" 2013+86	GILLESPIE CREEK	
"01" 2018+60		
"01" 2038+13		
"01" 2045+85		
"01" 2054+54		
"01" 2057+68		
"01" 2073+40		
"01" 2085+66		
"01" 2097+89		
"01" 2113+50		
"01" 2171+44		
"01" 2208+92		
"01" 2210+96		
"01" 2221+87		
"01" 2227+40		
"01" 2231+58		
"01" 2235+08		
"01" 2236+70		
"01" 2239+64		
"01" 2249+11		
"01" 2257+09		
"01" 2263+94		
"01" 2268+45		
"01" 2271+67		
"01" 2276+29		
"01" 2281+31		
"01" 2282+28		
"01" 2282+81		
TOTAL	30 (EACH)	



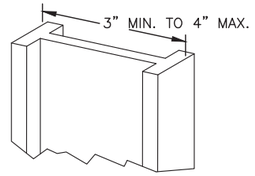
SIDE VIEW END VIEW

CULVERT MARKER POST DETAIL



AS-BUILT STATION AND SIZE OF PIPE TO BE STAMPED USING LETTERS A MINIMUM OF 1/4" HIGH INTO A 2" x 4" x 0.064" THICK BRASS PLATE. FASTEN PLATE TO THE SIDE FACING THE ROADWAY WITH TWO 1/8" DIA. BLIND RIVETS.

BRASS PLATE DETAIL



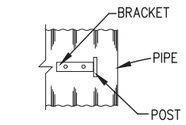
POST DETAIL

CULVERT MARKER NOTES:

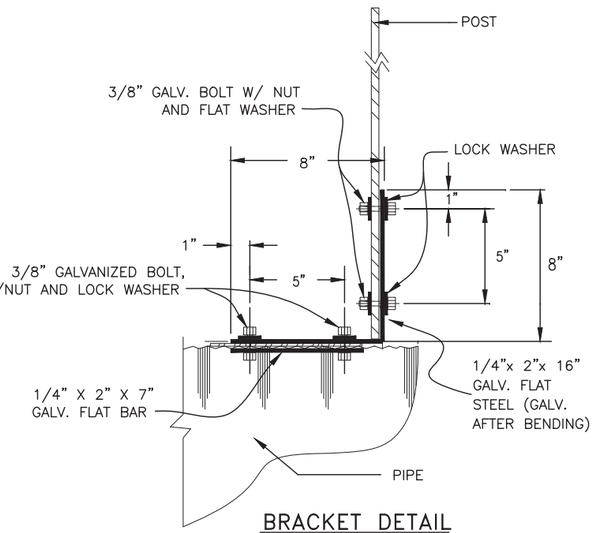
1. DRILL ALL BOLT HOLES. COAT HOLES IN PIPE WITH ZINC RICH PAINT. FLAME CUTTING SHALL NOT BE PERMITTED.
2. MARKER POST ENDS SHALL BE SQUARE.
3. GASKET MATERIAL SHALL BE PLACED BETWEEN DISSIMILAR METALS. GASKET MATERIAL SHALL BE APPROVED PRIOR TO INSTALLATION.
4. ALL DIMENSIONS IN INCHES.
5. WHEN MORE THAN TWO PIPES ARE LOCATED TOGETHER, ONLY THE FIRST AND LAST PIPE SHALL HAVE A MARKER.

CULVERT REMOVAL NOTES:

6. EXCAVATION FOR REMOVAL OF EXISTING CULVERTS SHALL BE SUBSIDIARY TO PAY ITEM 202.0017.0000. SUB-EXCAVATION NOT REQUIRED FOR APPROACH CULVERTS.



TOP VIEW



BRACKET DETAIL

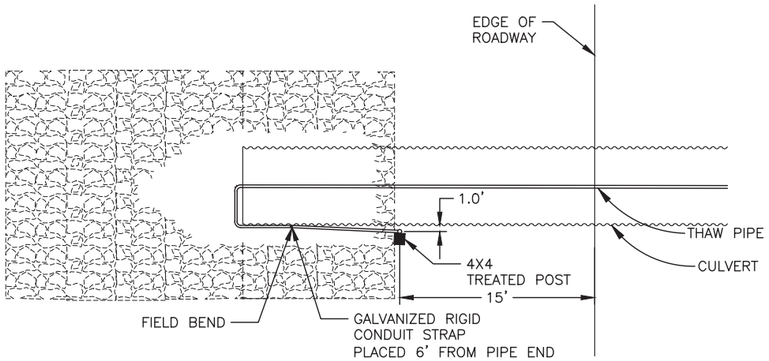
CULVERT DETAILS (2 OF 5)

STATE OF ALASKA 49TH
JUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\PWWORKING\west01\d0483589\63186_E_DETAILS-Culvert Details (2 of 5) Wed, Mar/23/22 12:02pm

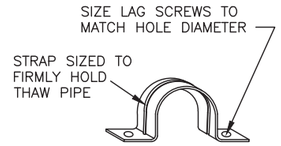
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	E3	E8



FILL CONDITION TOP VIEW

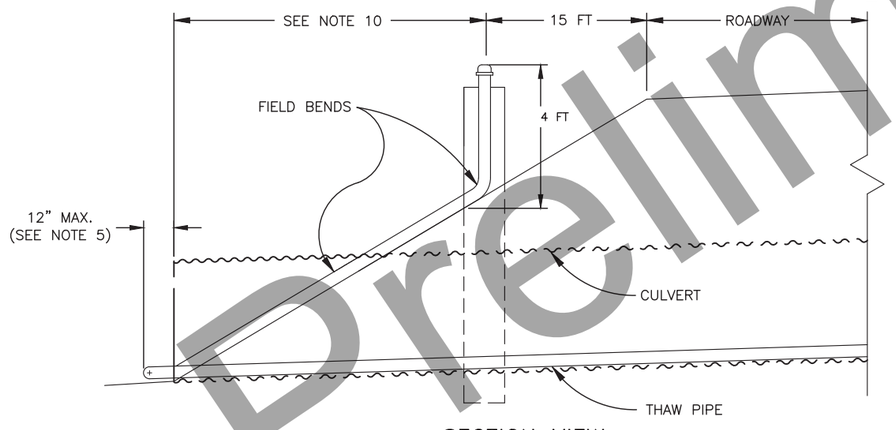
NOT TO SCALE



GALVANIZED RIGID CONDUIT STRAP

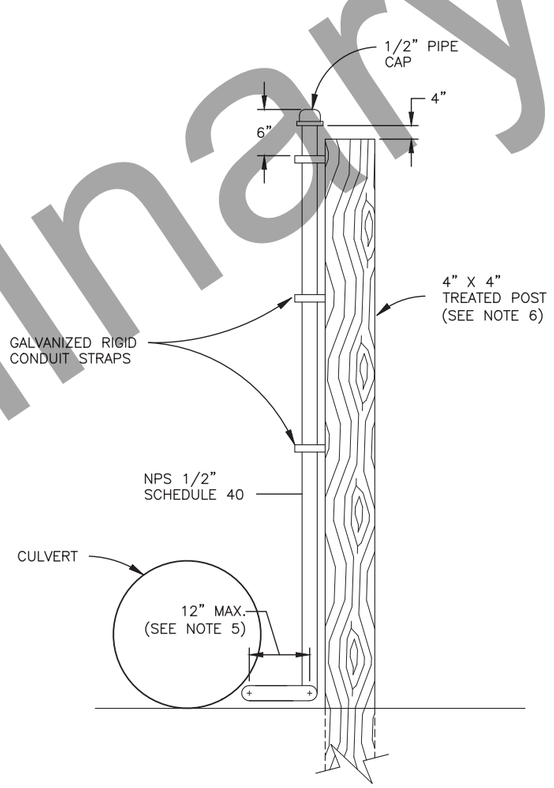
THAW PIPE NOTES:

1. REFER TO THE CULVERT SUMMARY FOR THAW PIPE LOCATIONS AND QUANTITIES.
2. LAY THE THAW PIPE INSIDE ON THE BOTTOM OF THE SPECIFIED CULVERT (NO INTERNAL PIPE HANGERS OR INTERNAL TIE–DOWN STRAPS ARE REQUIRED).
3. DO NOT LOCATE ANY THAW PIPE JOINTS OR COUPLINGS WITHIN 30 INCHES INSIDE OF CULVERT ENDS.
4. ALL THAW PIPES SHALL BE WATER TIGHT. SEAL ALL THAW PIPE JOINTS EXCEPT THE END CAPS WITH AN APPROVED SEALING COMPOUND.
5. THAW PIPES SHALL BE BENT WITHOUT KINKS 180 DEGREES AROUND CULVERT ENDS FROM THE INSIDE TO OUTSIDE OF THE CULVERT WITH NO GREATER THAN 6–IN BEND RADIUS. THE BEND SHALL NOT PROTRUDE MORE THAN 12 INCHES BEYOND THE END OF THE CULVERT. DO NOT LOCATE THAW PIPE JOINTS OR COUPLINGS WITHIN 6 INCHES OF THE BEND OUTSIDE OF CULVERT ENDS.
6. USE PRESSURE–TREATED WOOD SUPPORT POSTS OF HEM–FIR, NO. 2 OR BETTER, FOR EACH THAW PIPE STAND. PRESERVATIVE SHALL BE AMMONIACAL ZINC ARSENATE (ACZA), OR CHROMATED COPPER ARSENATE (CCA), PRESSURE TREATED IN ACCORDANCE WITH AASHTO M133.
7. EMBED EACH TREATED SUPPORT POST A MINIMUM OF 4 FEET.
8. FASTEN THAW PIPES TO SUPPORT POSTS WITH GALVANIZED RIGID CONDUIT STRAPS ON 1–FT CENTERS AND 2" MINIMUM LENGTH GALVANIZED LAG SCREWS WITH LOCK WASHERS. USE LAG SCREWS HAVING A DIAMETER SIZED TO MATCH THE HOLES IN THE STRAP (SEE DETAIL).
9. WHEN BEND RUN LENGTH EXCEEDS 5 FEET, LAY THE EXPOSED THAW PIPE ON THE EXPOSED CULVERT PIPE AND FLUSH TO THE EMBANKMENT SURFACE FOR THE LENGTH REQUIRED TO REACH THE SUPPORT POST AS APPROVED BY THE ENGINEER.
10. FILL ALL THAW PIPES WITH A MIX OF TINTED PROPYLENE GLYCOL ANTIFREEZE AND WATER TO PROTECT AGAINST FREEZING DOWN TO –50 DEGREES FAHRENHEIT, THEN CAP THE THAW PIPE.
11. ALL LABOR AND MATERIALS REQUIRED TO INSTALL THE THAW PIPES AND SUPPORT POSTS ARE SUBSIDIARY TO PAY ITEM 616.002.0050.

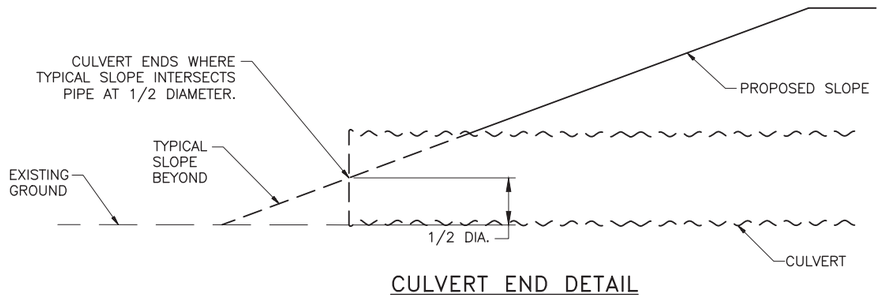


SECTION VIEW

APPLIES TO BOTH SIDES OF THE ROADWAY



STAND PIPE



CULVERT END DETAIL

THAW PIPE DETAILS

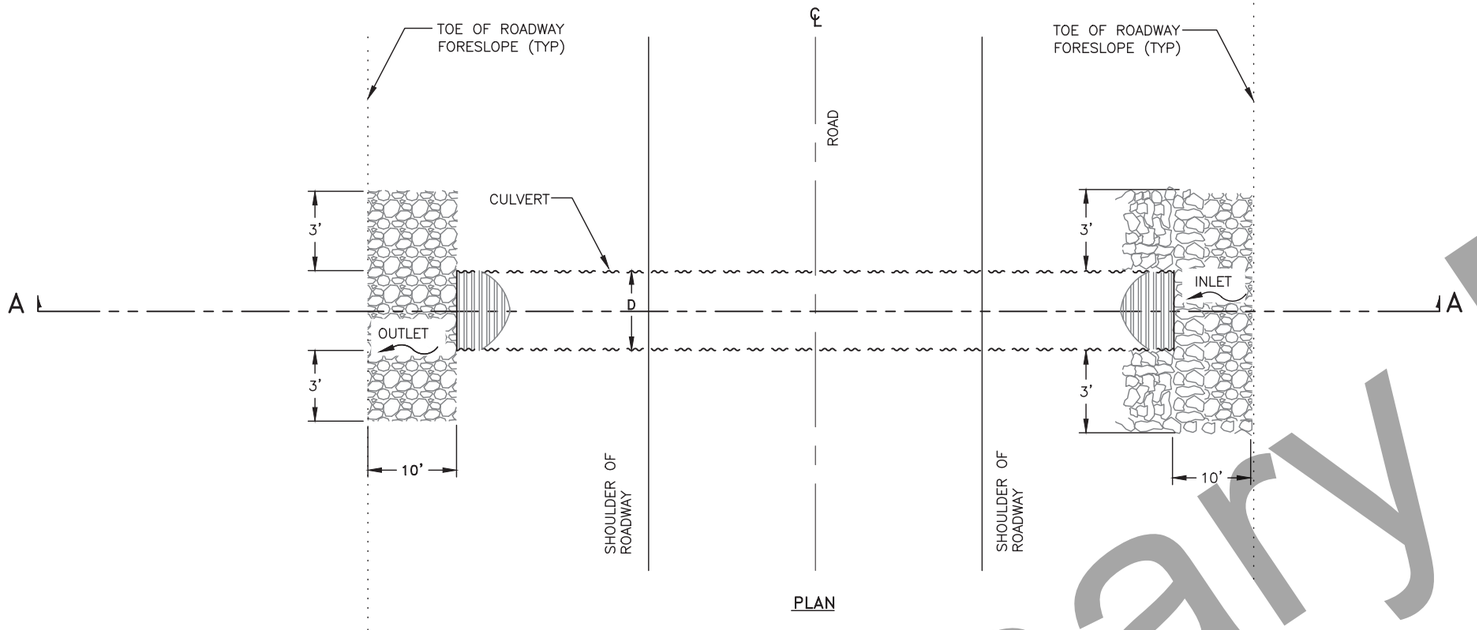
CULVERT DETAILS (3 OF 5)

STATE OF ALASKA 49TH
JUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

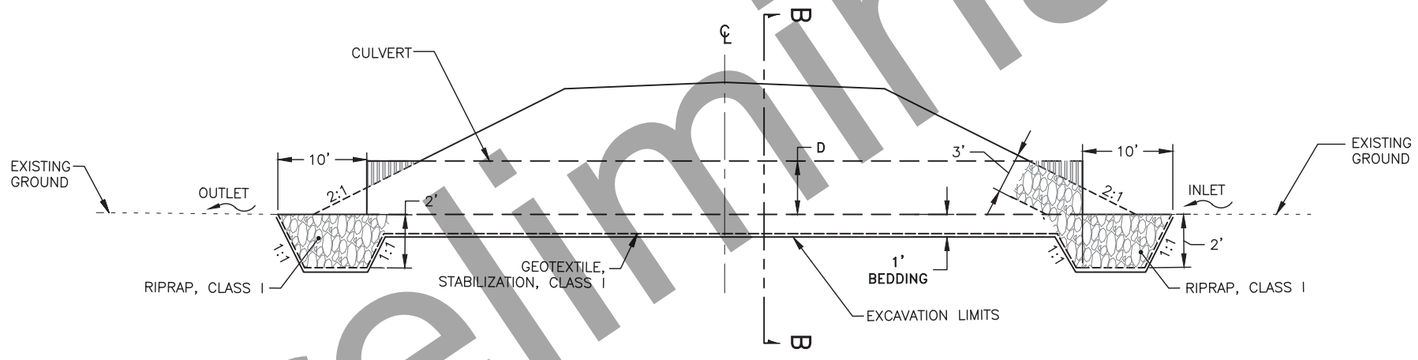
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644–2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_E_DETAILS–Culvert Details (3 of 5) Fri, Mar/11/22 09:33am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	E4	E8

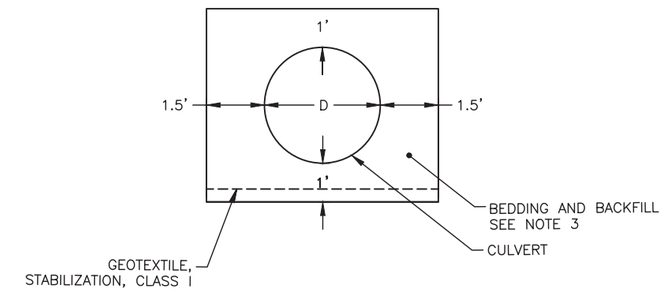


PLAN



SECTION A–A

RIPRAP APRON DETAIL



SECTION B–B

CULVERT NOTES:

1. CONSTRUCT RIPRAP APRONS AS NOTED IN THE CULVERT SUMMARY TABLE.
2. EXCAVATE BELOW ORIGINAL GROUND WHERE RIPRAP IS REQUIRED AND BACKFILL WITH RIPRAP, CLASS I. THIS WORK IS SUBSIDIARY TO THE PAY ITEM 611.0001.0001 SHOWN ON THE CULVERT SUMMARY TABLE.
3. CONSTRUCT BEDDING AND BACKFILL WITH SELECTED MATERIAL, TYPE F.
4. SEE SHEET E1 FOR CULVERT SIZE, LOCATION AND INSTALLATION DETAILS.

SECTION B–B NOTES:

1. CULVERT EXCAVATION LIMITS ARE NOT SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS, METHODS, SEQUENCE, SAFETY AND QUALITY CONTROL.
2. THE WIDTH OF GEOTEXTILE MUST BE MADE USING ONE STRIP OF GEOTEXTILE

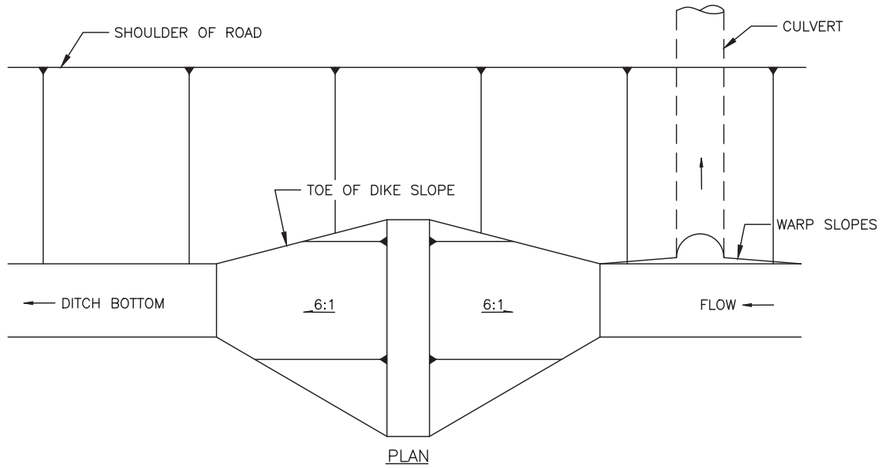
CULVERT DETAILS (4 OF 5)

STATE OF ALASKA
49 TH
JUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

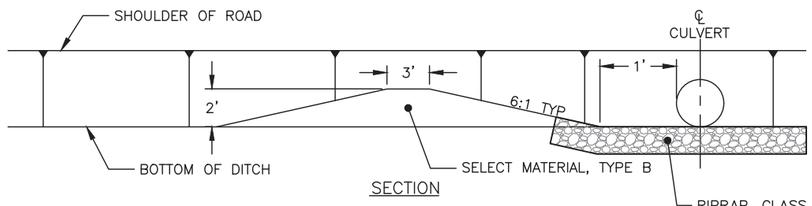
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\PWWORKING\west01\d0483589\63186_E_DETAILS-Culvert Details (4 of 5) Wed, Mar/23/22 12:02pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	E5	E8



PLAN

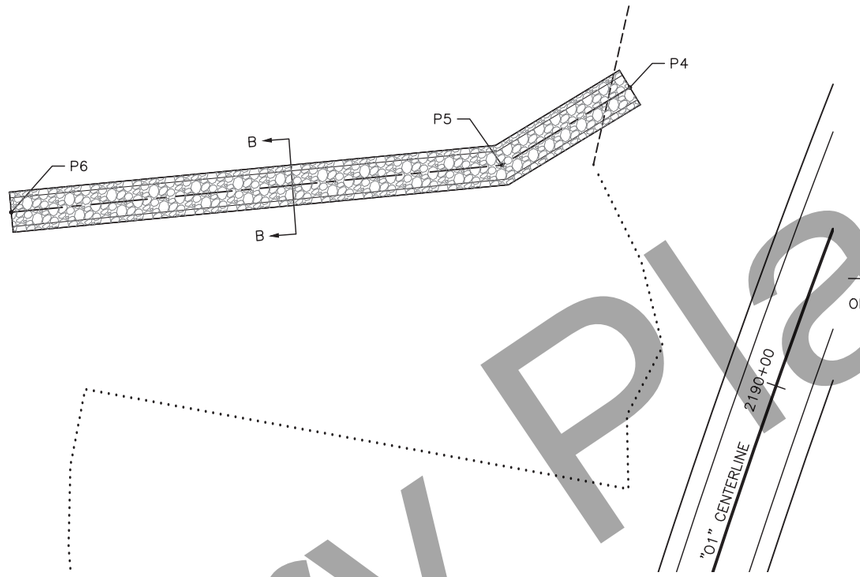


SECTION

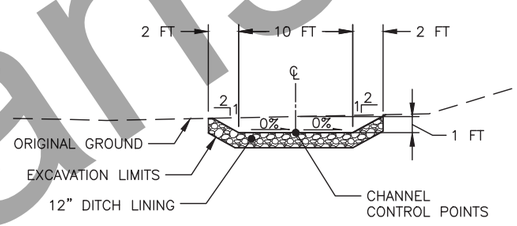
DITCH DIKE DETAIL
NOT TO SCALE

DITCH DIKE NOTES:

1. SEE CULVERT SUMMARY FOR LOCATIONS.
2. DITCH DIKES SHALL NOT BE MEASURED SEPARATELY, ALL LABOR, EQUIPMENT AND MATERIALS NEEDED TO CONSTRUCT DITCH DIKE IS SUBSIDIARY TO 603 SERIES PAY ITEMS.

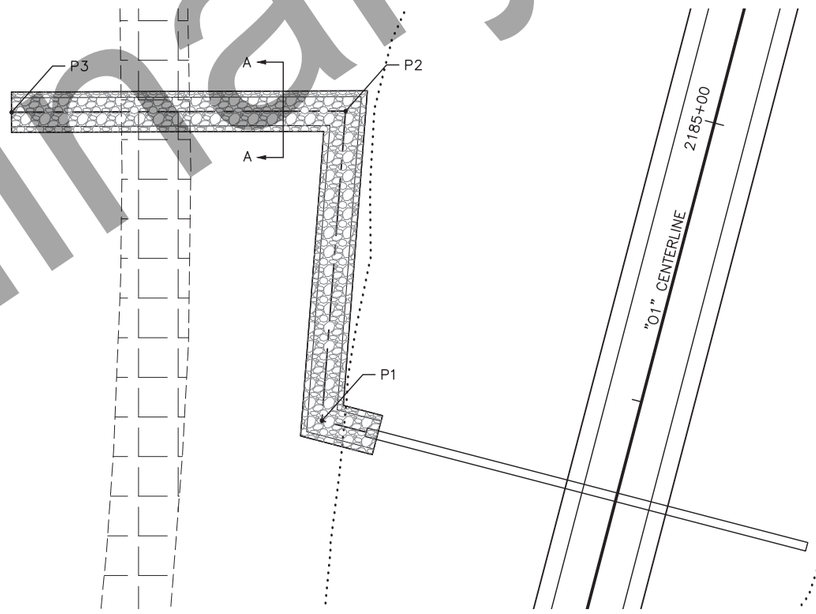


DOWN DRAIN GRADING DETAIL

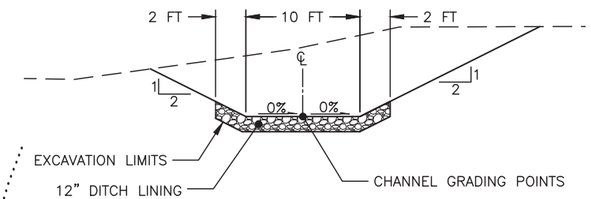


SECTION B–B

CHANNEL CONTROL POINTS		
POINT NO.	STATION	OFFSET
P4	2190+79	83.3' LT
P5	2190+39	115.4' LT
P6	2189+71	270.5' LT



PIPE OUTLET GRADING DETAIL



SECTION A–A

CHANNEL GRADING POINTS			
POINT NO.	STATION	OFFSET	ELEVATION
P1	2183+65	105.6' LT	2745.0
P2	2184+72	124.9' LT	2743.0
P3	2184+42	236.9' LT	2740.0'

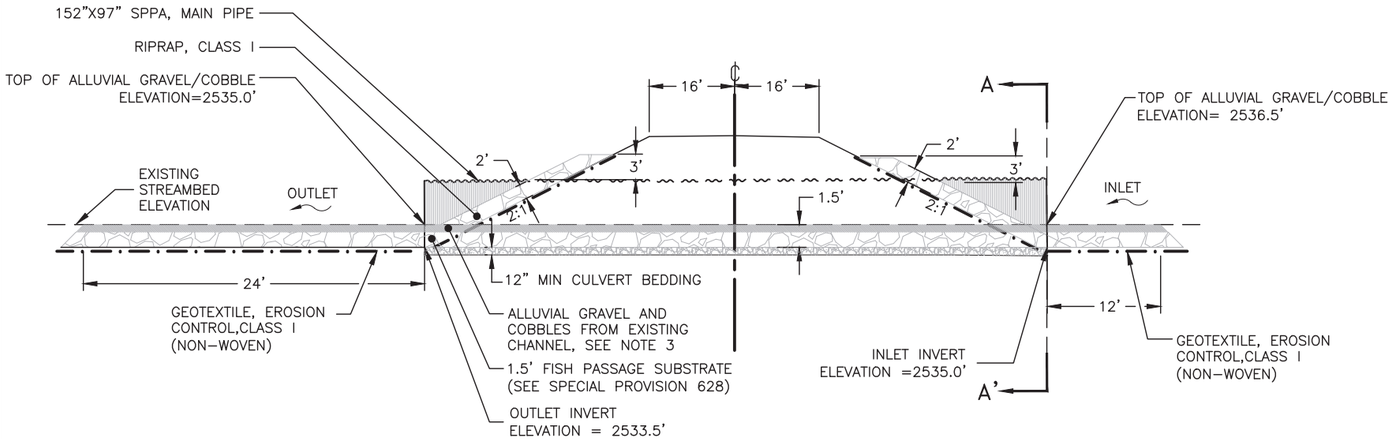
CULVERT DETAILS (5 OF 5)

STATE OF ALASKA 49TH
JUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_E_DETAILS-Culvert Details (5 of 5) Fri, Mar/11/22 09:33am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	E6	E8



SECTION B–B

NOTES:

1. THIS CULVERT WAS DESIGNED TO PROVIDE FISH PASSAGE.
2. SEE GENERAL AND FISH PASSAGE CULVERT NOTES ON SHEET E1.
3. INSTALL ALLUVIAL GRAVEL AND COBBLES FROM EXISTING CHANNEL TO FILL VOIDS WITHIN THE FISH PASS SUBSTRATE. SEE SPECIAL PROVISION 628.
4. INSTALL A 152"x97" STRUCTURAL PLATE PIPE ARCH (SPPA) DEPRESSED 1.5 FEET INTO THE CHANNEL BOTTOM.

HYDROLOGIC & HYDRAULIC SUMMARY

RICHARDSON HWY MILE 167.7 – STATION 2013+76–GILLESPIE CREEK

BASIN AREA (SQ. MI)	QFISH (CFS)	Q2 (CFS)	Q5 (CFS)	Q50 (CFS)	Q100 (CFS)
8.9	23.3	116	203	443	524

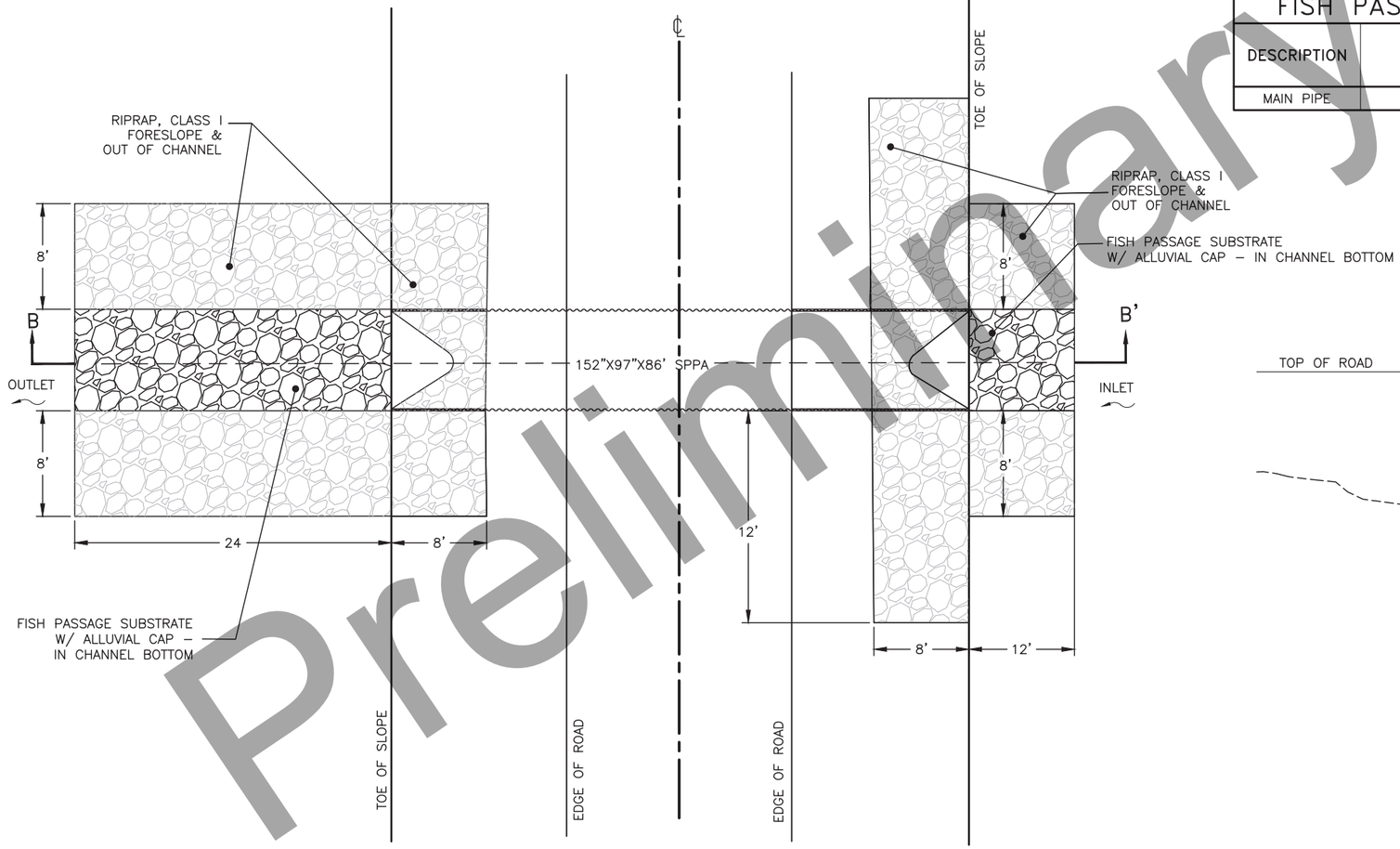
HEADWATER ELEVATION @Q50 IS 2542.1 FT, @Q100 IS 2543.0 FT

HW/D @ 1= 450 CFS, ROAD OVERTOPS AT APPROXIMATELY 704.9 CFS

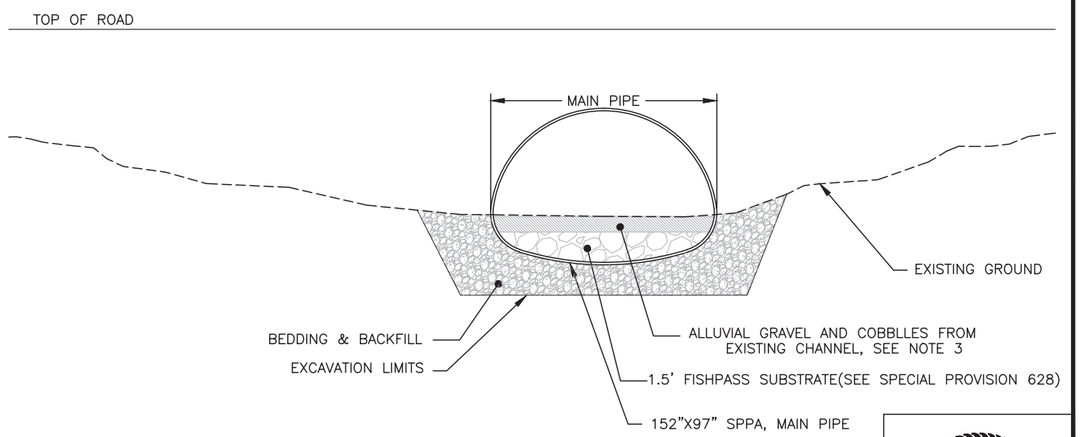
CULVERT PURPOSE: CROSS DRAINAGE/ FISH PASSAGE

FISH PASSAGE CULVERT SUMMARY RICHARDSON HWY MILE 167.7

DESCRIPTION	MATERIAL	LOCATION	DIAMETER OR SPAN X RISE (IN)	LENGTH (FT)	SKEW	ELEVATIONS (FT)	
						INLET INVERT	OUTLET INVERT
MAIN PIPE	10 GAGE SPPA	2013+76	152"X97"	86	0 DEG.	2535.0	2533.5



CULVERT APRON PLAN VIEW



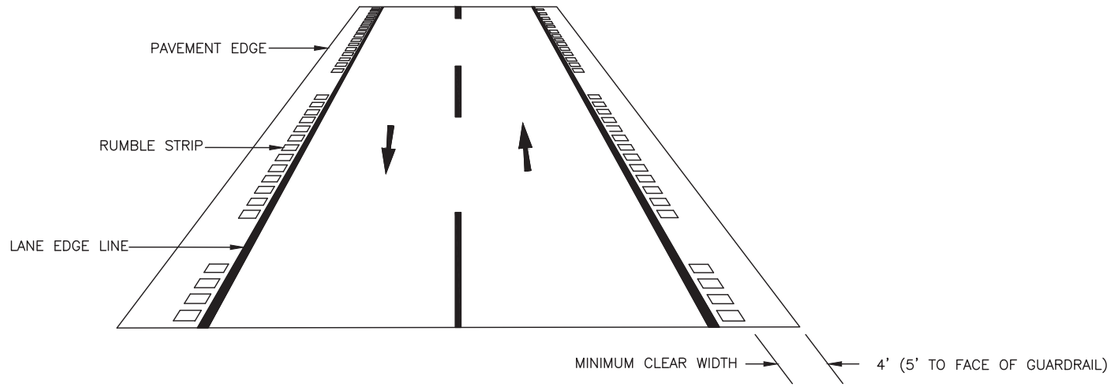
SECTION A–A

GILLESPIE CREEK FISH PASSAGE CULVERT

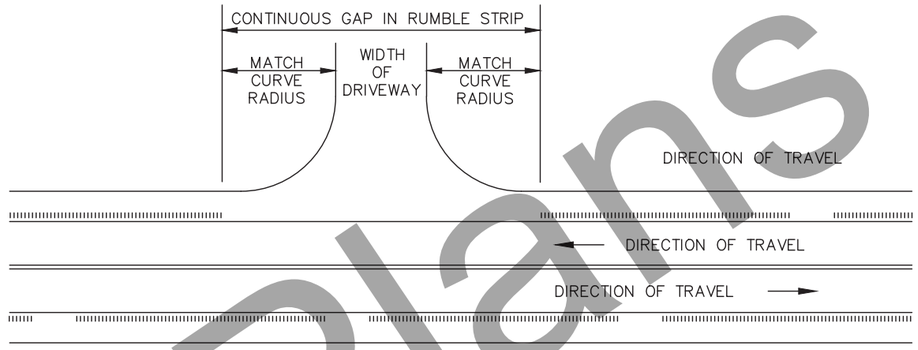
STATE OF ALASKA 49TH
JUSTIN C. HANNAFIOUS C.E. 14065 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION

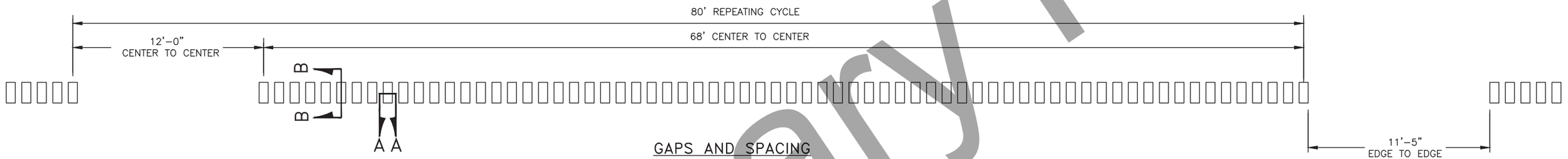
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	E7	E8



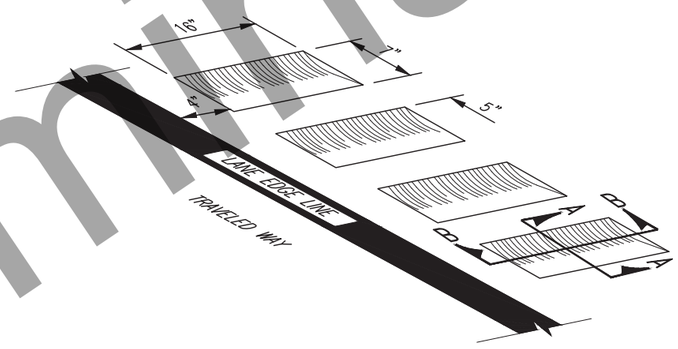
TYPICAL SHOULDER INSTALLATION – TWO–WAY
PERSPECTIVE VIEW

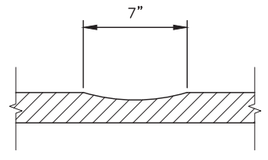


RUMBLE STRIP LAYOUT AT APPROACHES

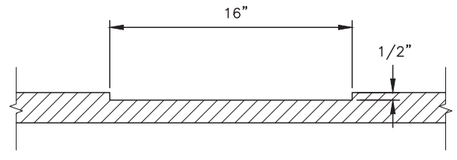


GAPS AND SPACING





SECTION A–A



SECTION B–B

TYPICAL SHOULDER INSTALLATION DETAIL

RUMBLE STRIP DETAILS

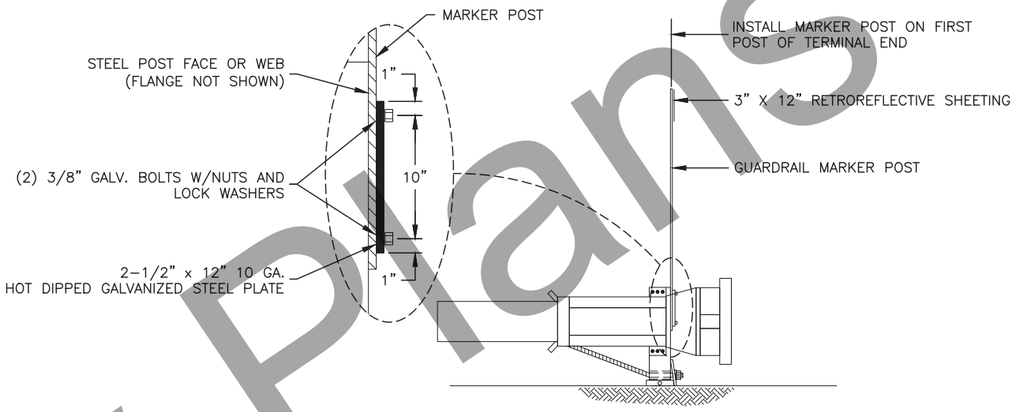
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644–2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_E_DETAILS–Rumble Strip Details Fri, Mar/11/22 09:33am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	E8	E8

GUARDRAIL SUMMARY

BEGIN STATION	END STATION	LT/RT	606.0001.0000 W-BEAM GUARDRAIL (FEET)	606.0013.0000 PARALLEL GUARDRAIL TERMINAL (EACH)	REMARKS
"01"2202+50	"01" 2219+00	LT	1650	2	



GUARDRAIL MARKER POST ATTACHMENT DETAIL
PARALLEL GUARDRAIL TERMINAL

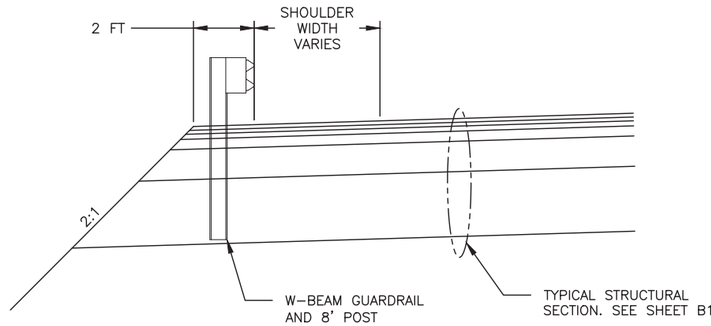
GUARDRAIL NOTES:

1. FOR PARALLEL GUARDRAIL TERMINALS, CONSTRUCT THE GUARDRAIL TERMINAL WIDENING IN ACCORDANCE WITH THE "STANDARD GUARDRAIL TERMINAL WIDENING DETAIL" ON SHEET V14. THE END OFFSET (X) SHALL BE 2 FEET. USE 50' PARALLEL GUARDRAIL TERMINALS.

GUARDRAIL MARKER NOTES:

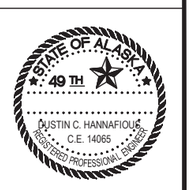
1. GUARDRAIL MARKER POSTS SHALL BE YELLOW AND AT LEAST 72" LONG. POSTS SHALL MEET THE REQUIREMENTS OF SECTION 730-2.05 FLEXIBLE DELINEATOR POSTS.
2. RETROREFLECTIVE SHEETING SHALL MEET ASTM D4956 REQUIREMENTS FOR TYPE VIII, IX, OR XI. COLOR OF RETROREFLECTIVE SHEETING SHALL MATCH COLOR OF ADJACENT EDGE LINE STRIPE. PLACE RETROREFLECTIVE SHEETING ON SIDE OF MARKER POST FACING TRAFFIC IN ADJACENT LANE.
3. DRILL ALL BOLT HOLES. COAT HOLES WITH ZINC RICH PAINT. FLAME CUTTING SHALL NOT BE PERMITTED.
4. ALL WORK AND MATERIAL REQUIRED TO INSTALL GUARDRAIL MARKER POSTS IS SUBSIDIARY TO 606 PAY ITEMS.

POST DETAIL
CROSS-SECTIONAL VIEW



GUARDRAIL WIDENING DETAIL
APPLIES TO BOTH SIDES OF THE ROADWAY

GUARDRAIL DETAILS



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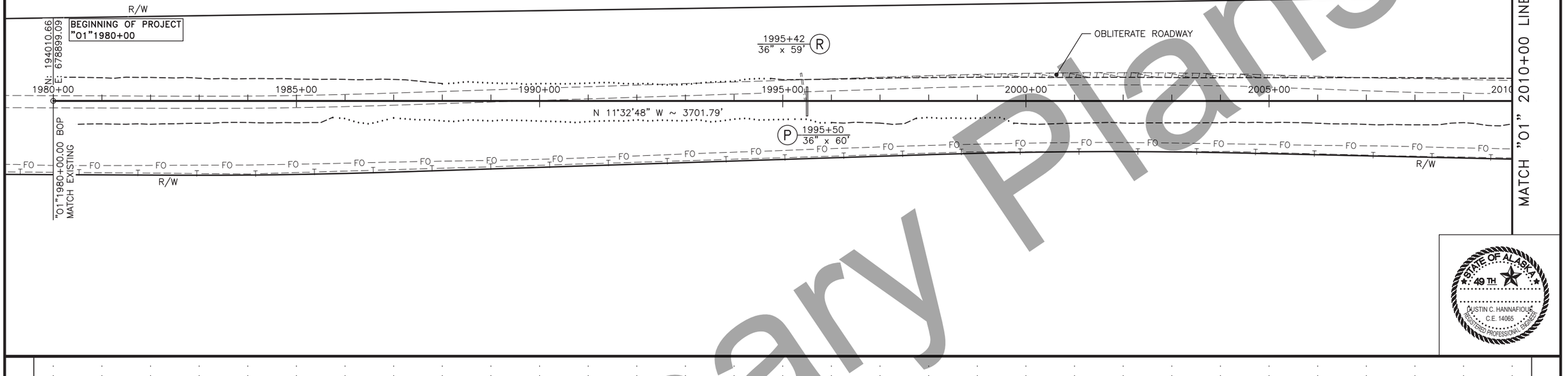
C:\pwworking\west01\d0483589\63186_E_DETAILS-Guardrail Details Fri, Mar/11/22 09:33am

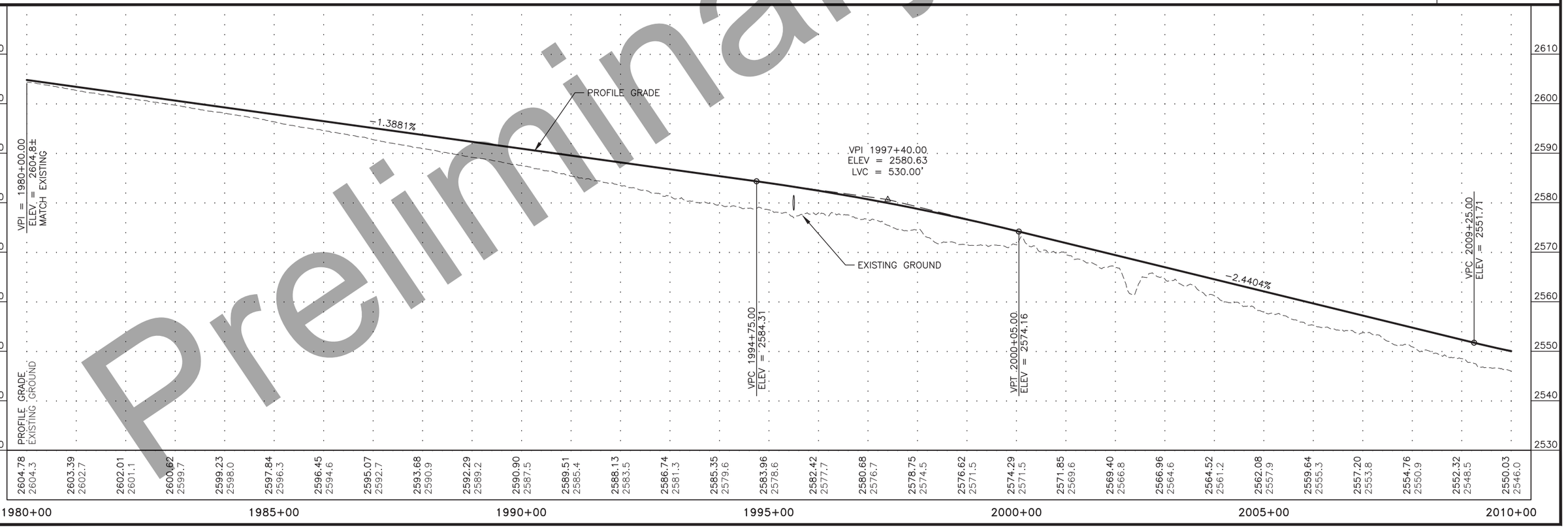
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F1	F14

PLAN VIEW KEY

- (P) STATION / DIAMETER X LENGTH — *INSTALL CULVERT PIPE*
- (A) STATION / TYPE, WIDTH — *CONSTRUCT APPROACH*
- (R) STATION / DIAMETER X LENGTH — *REMOVE PIPE*
- (#) STATION / SIGN CODE(S) — *SIGN LOCATION #*





STATE OF ALASKA
49 TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

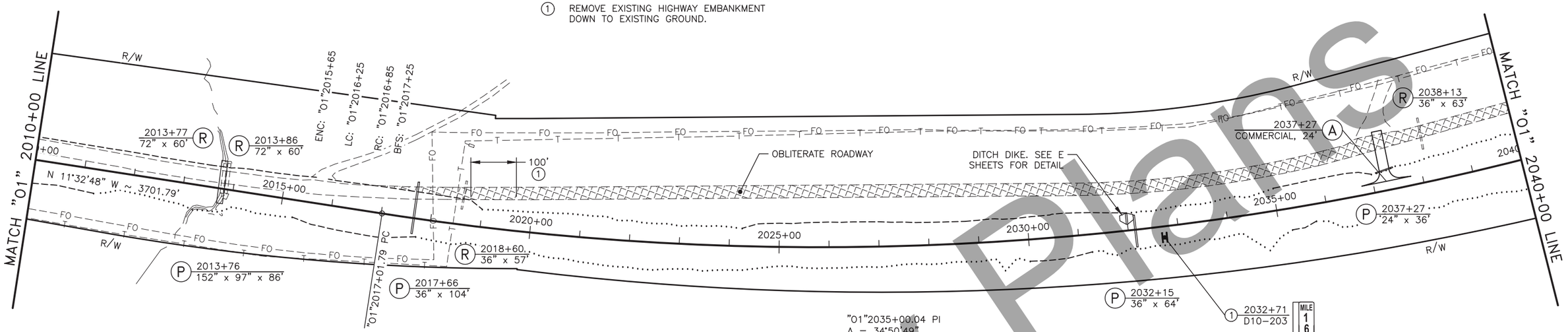
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\631860_F_P&P-F1 Fri, Mar/11/22 09:33am

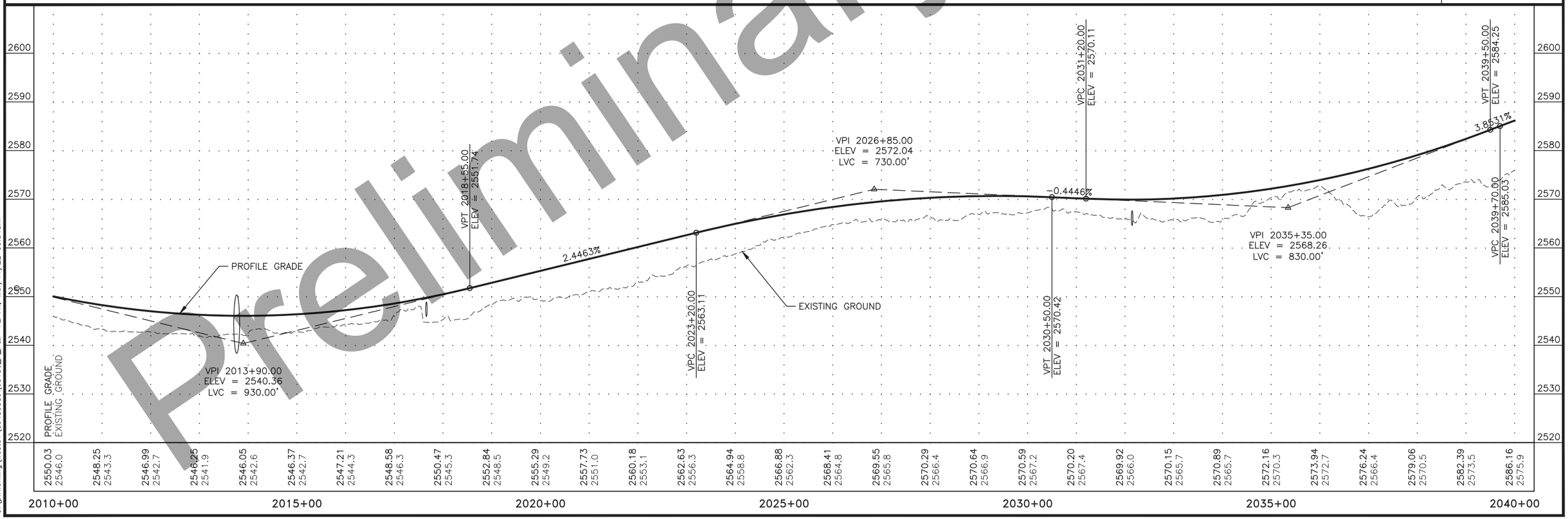
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F2	F14

SHEET NOTES:

1. REMOVE EXISTING HIGHWAY EMBANKMENT DOWN TO EXISTING GROUND.





STATE OF ALASKA 49TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

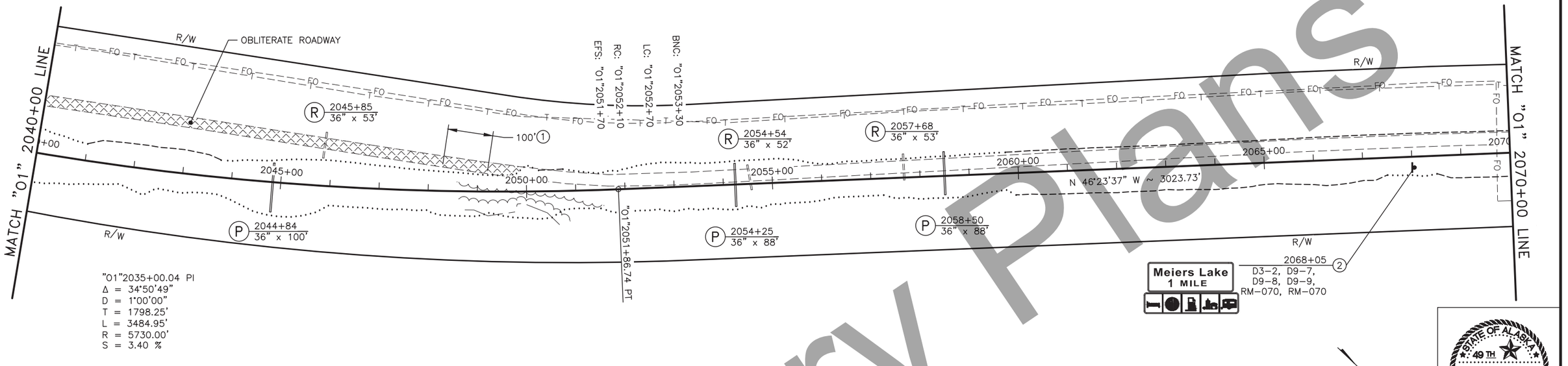
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_F_P&P-F2 Fri, Mar/11/22 09:34am

NO.	DATE	REVISION

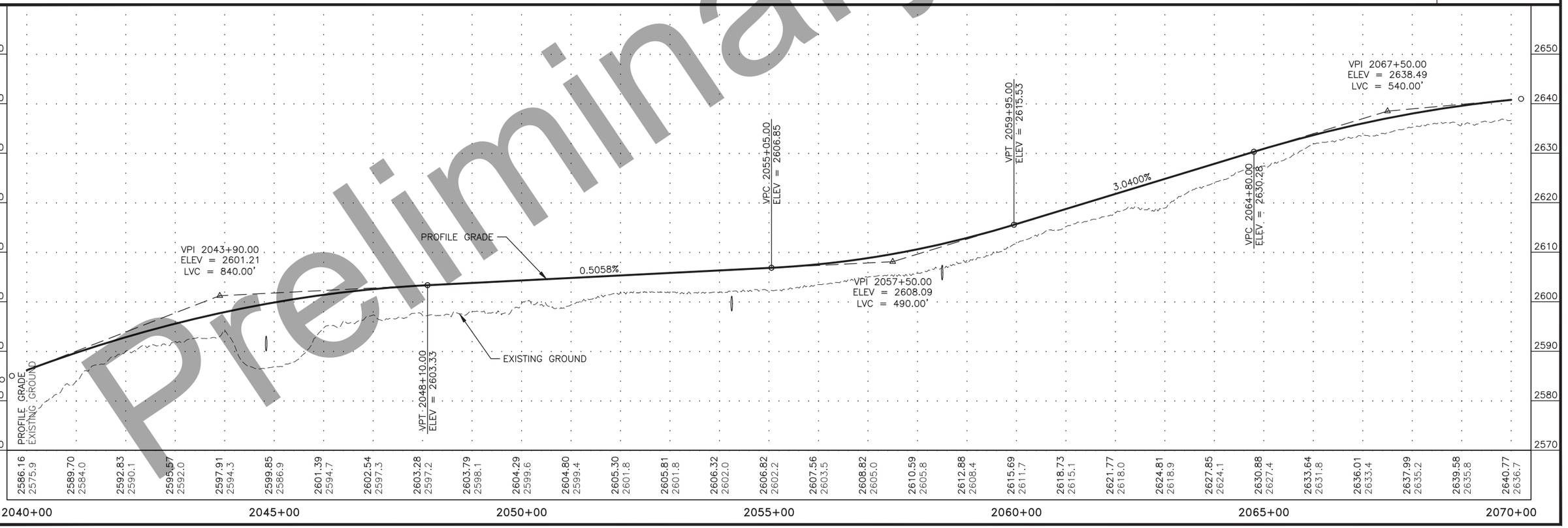
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F3	F14

SHEET NOTES:

1. REMOVE EXISTING HIGHWAY EMBANKMENT DOWN TO EXISTING GROUND.



"01"2035+00.04 PI
Δ = 34°50'49"
D = 1°00'00"
T = 1798.25'
L = 3484.95'
R = 5730.00'
S = 3.40 %

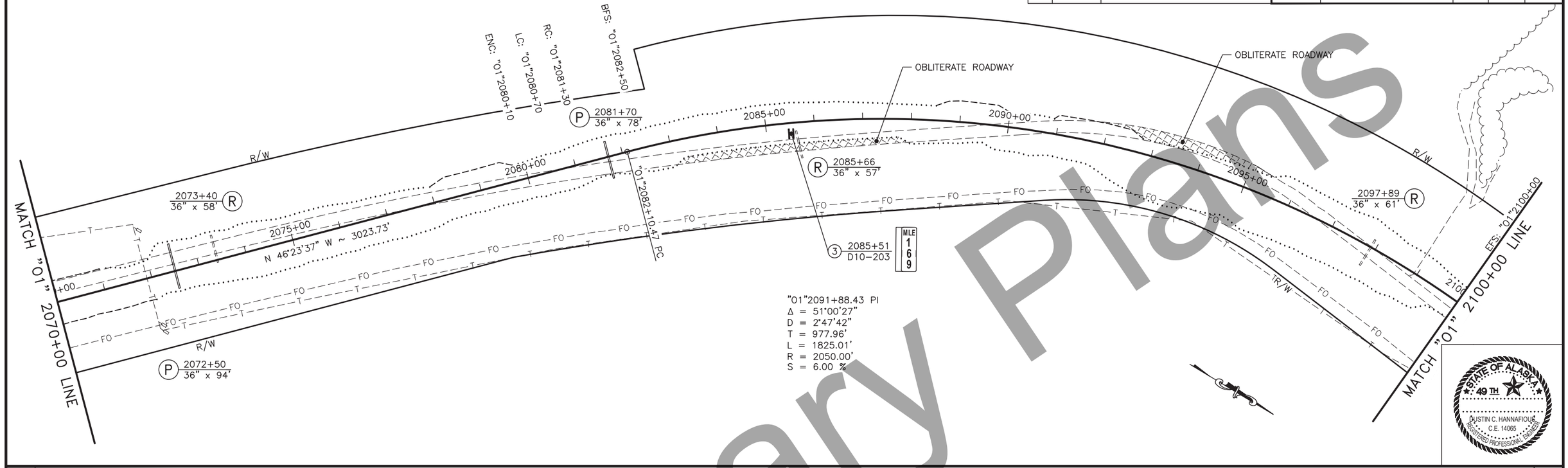


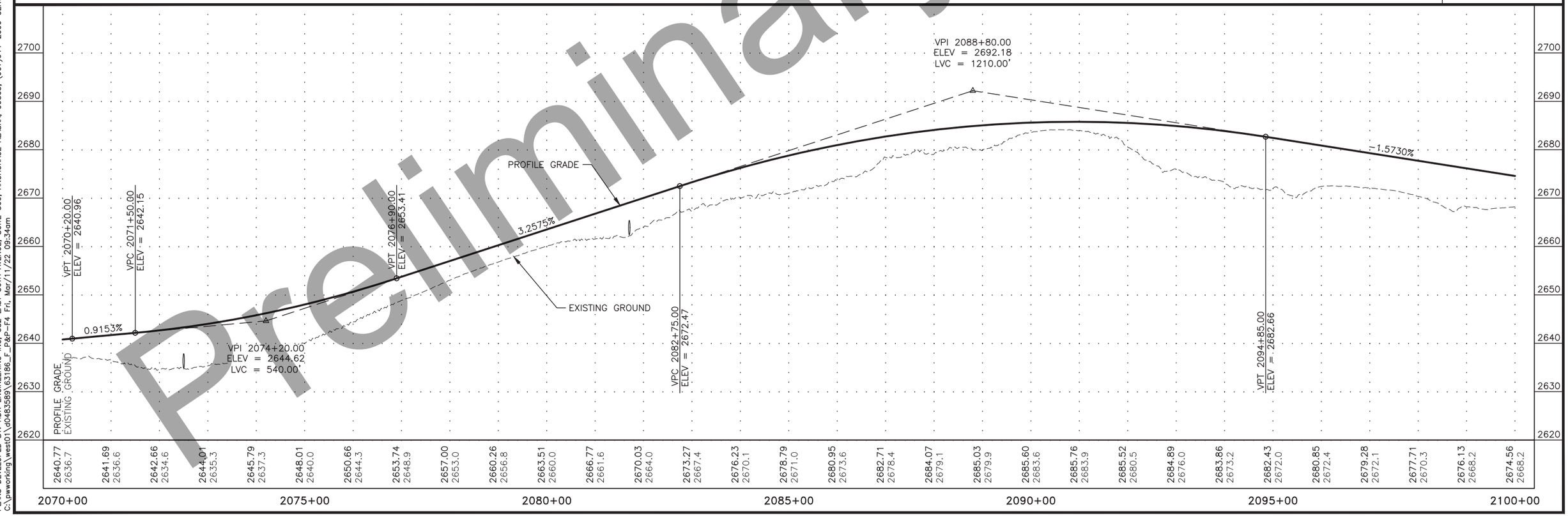
STATE OF ALASKA 49TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\631186_F_P&P-F3 Fri, Mar/11/22 09:34am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F4	F14





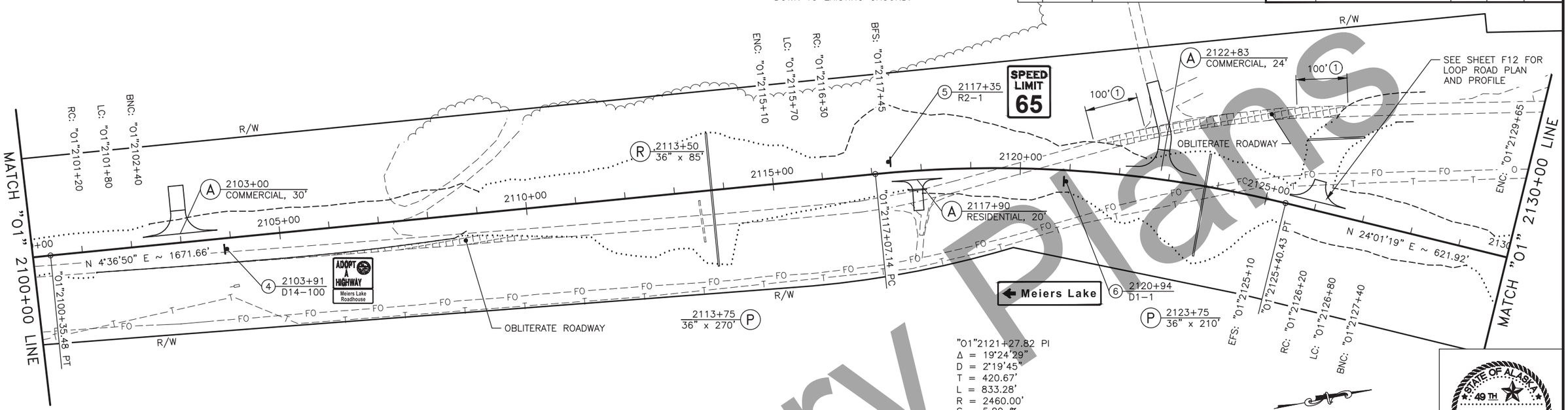
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\631860_F_P&P-F4 Fri, Mar/11/22 09:34am

NO.	DATE	REVISION

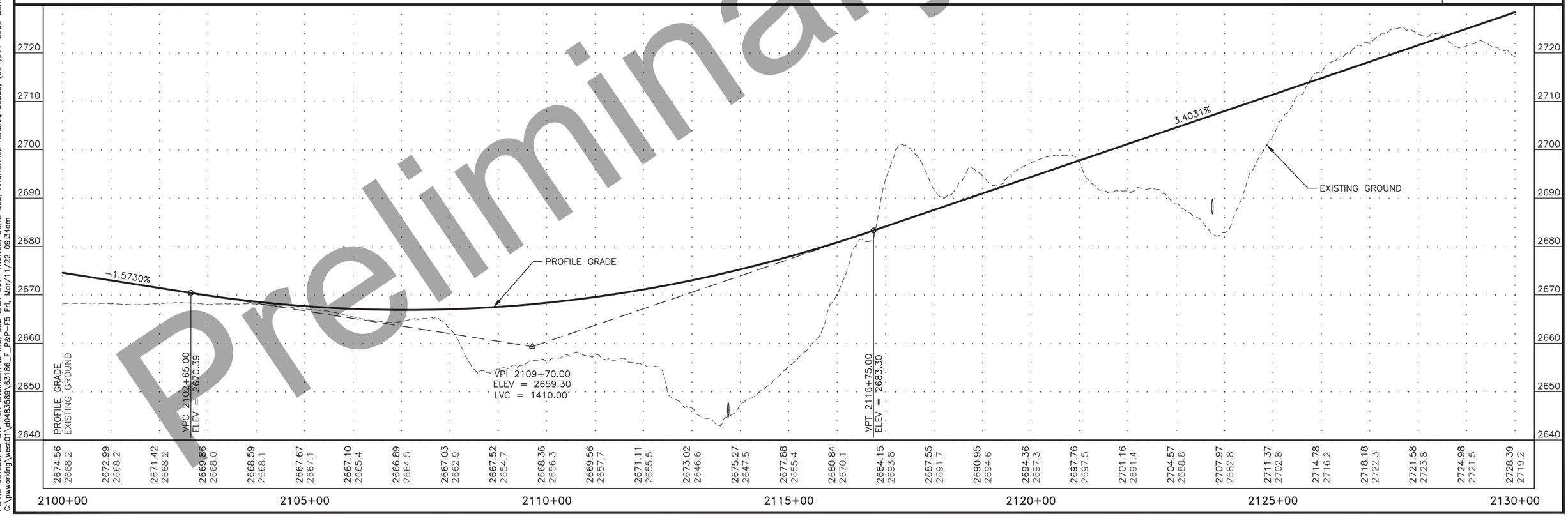
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F5	F14

SHEET NOTES:

1. REMOVE EXISTING HIGHWAY EMBANKMENT DOWN TO EXISTING GROUND.



"01"2121+27.82 PI
Δ = 19°24'29"
D = 2°19'45"
T = 420.67'
L = 833.28'
R = 2460.00'
S = 5.80 %

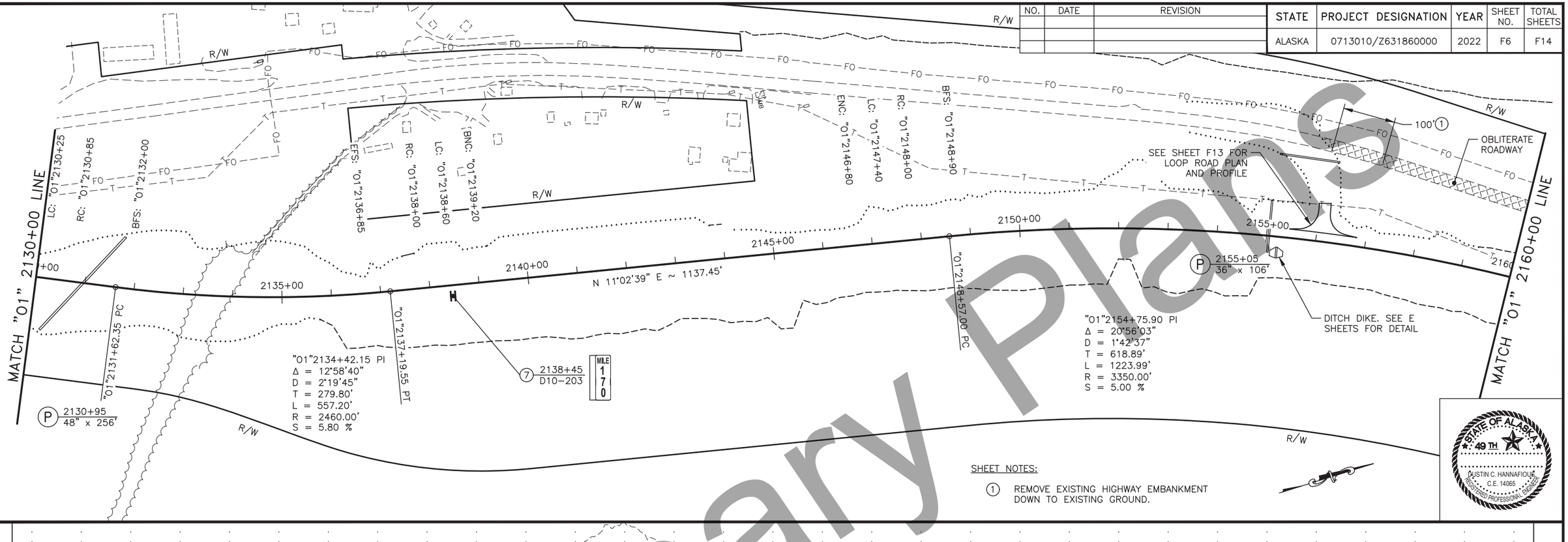


STATE OF ALASKA 49TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\631186_F_P&P-F5 Fri, Mar/11/22 09:34am

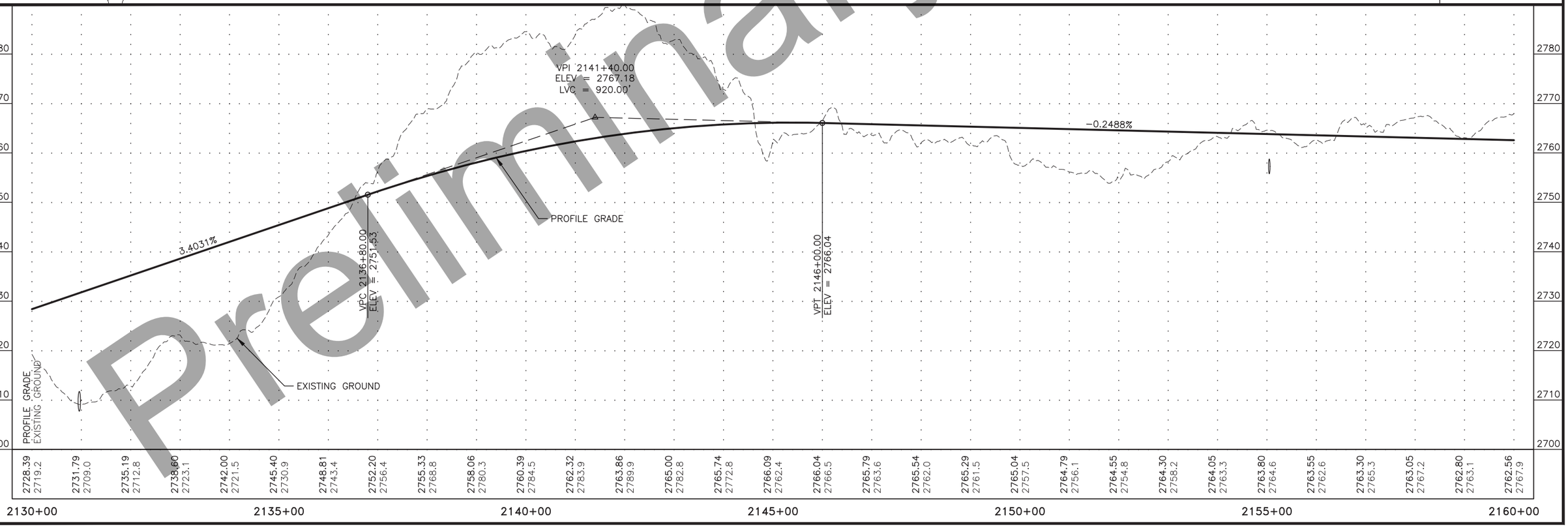
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F6	F14



SHEET NOTES:

(1) REMOVE EXISTING HIGHWAY EMBANKMENT DOWN TO EXISTING GROUND.



STATE OF ALASKA 49 TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
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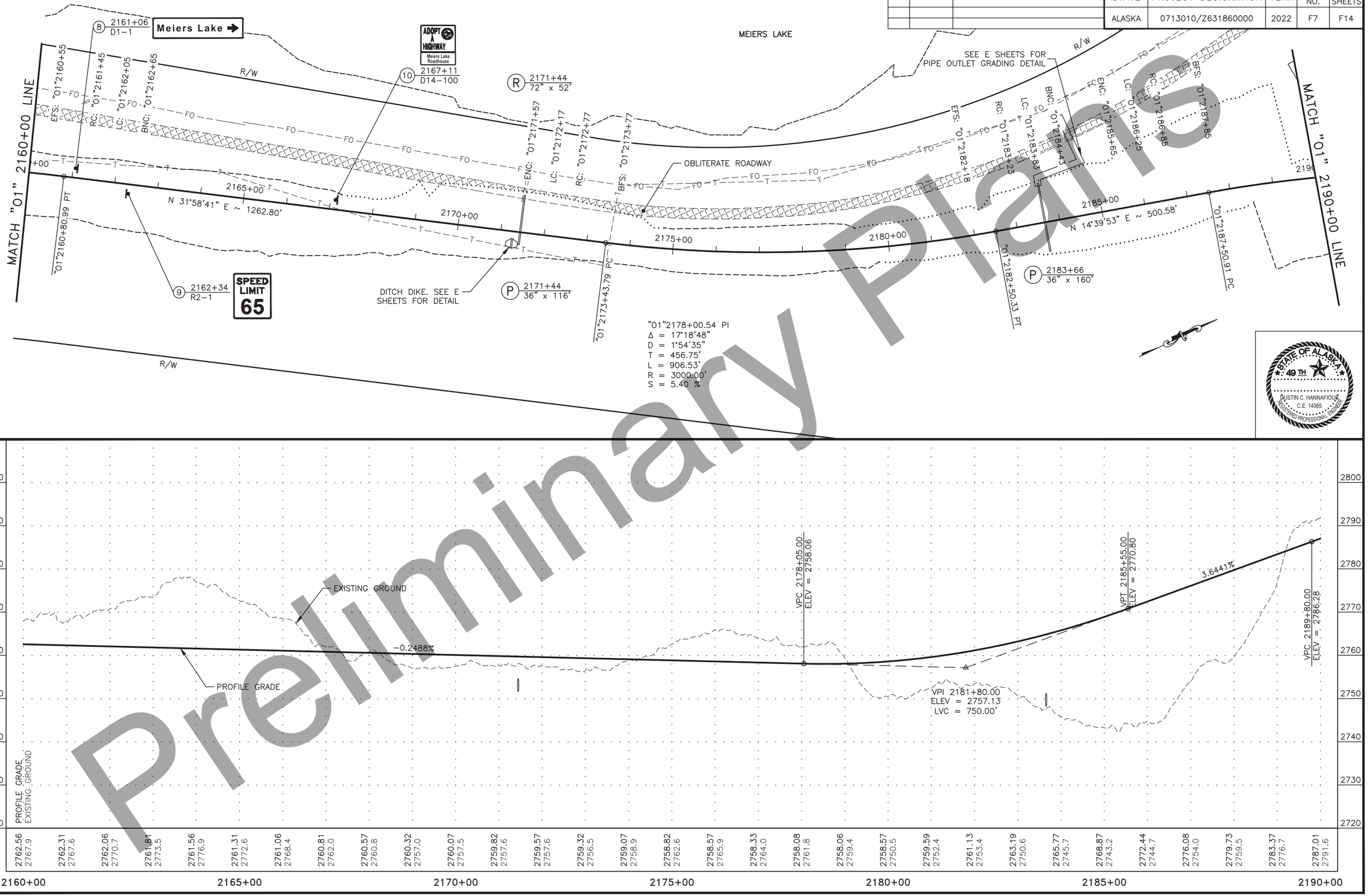
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F7	F14



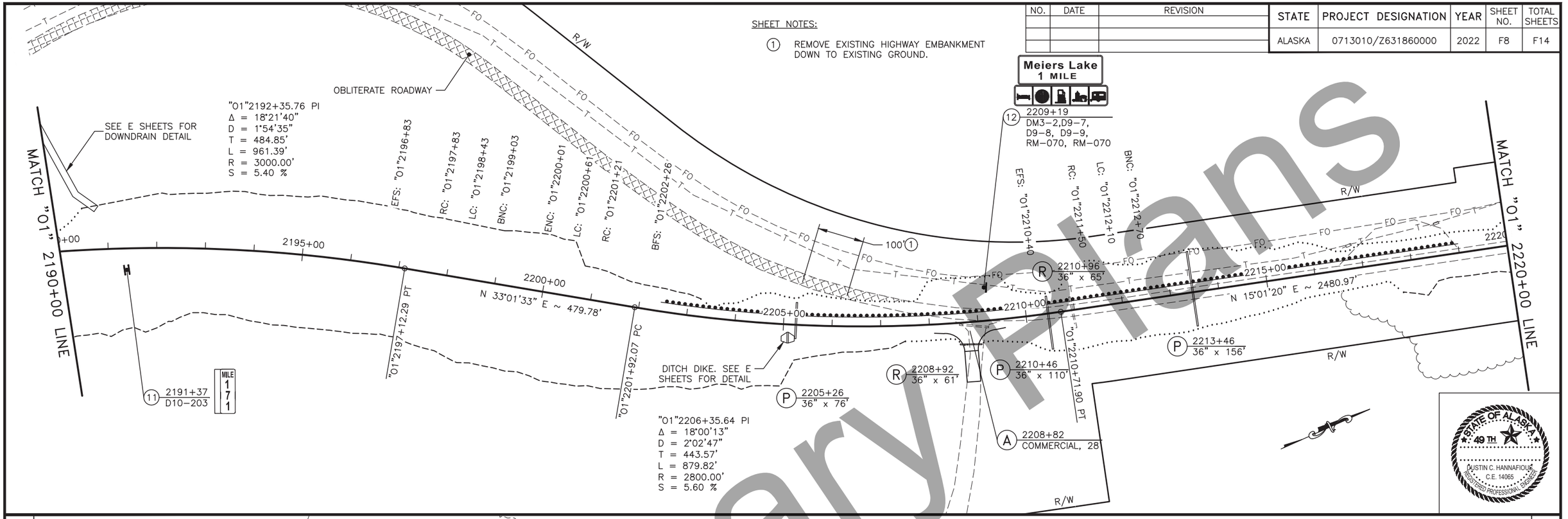
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\631860_F_P&P-F7 Fri, Mar/11/22 09:35am

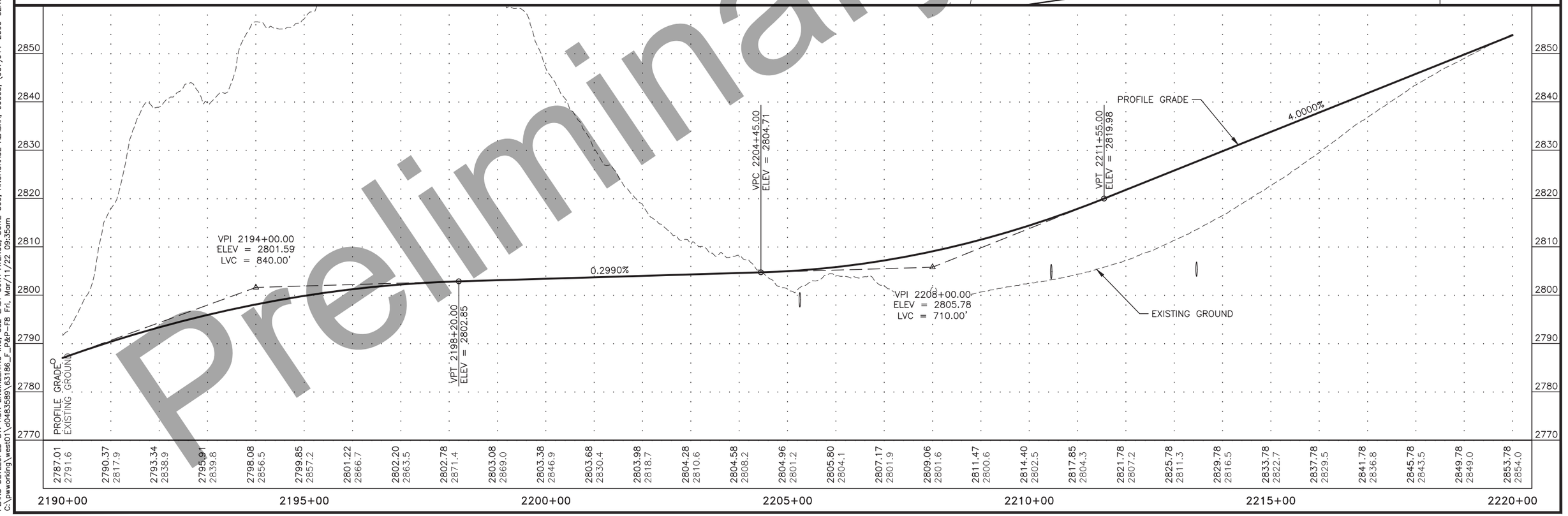
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F8	F14

SHEET NOTES:

1. REMOVE EXISTING HIGHWAY EMBANKMENT DOWN TO EXISTING GROUND.





STATE OF ALASKA 49 TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
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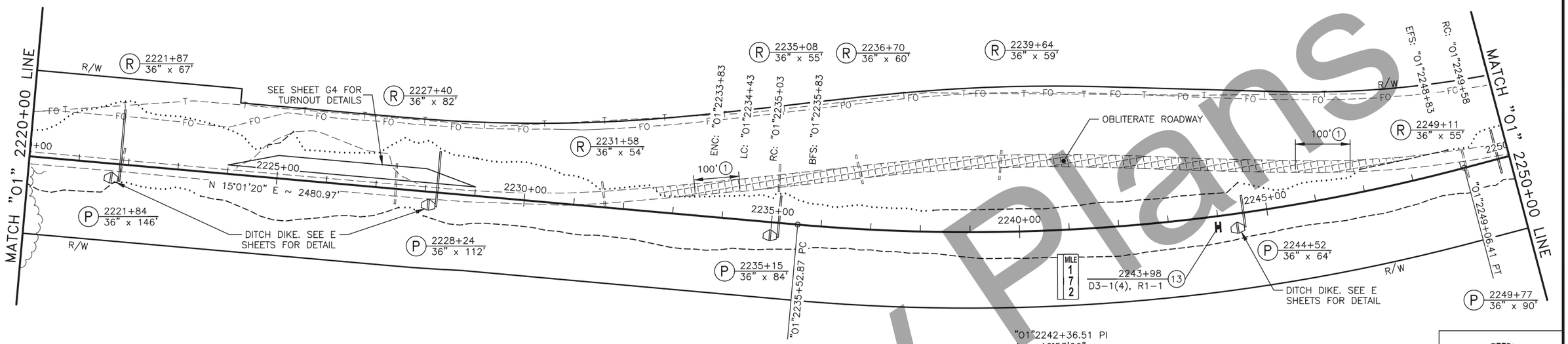
NO.	DATE	REVISION

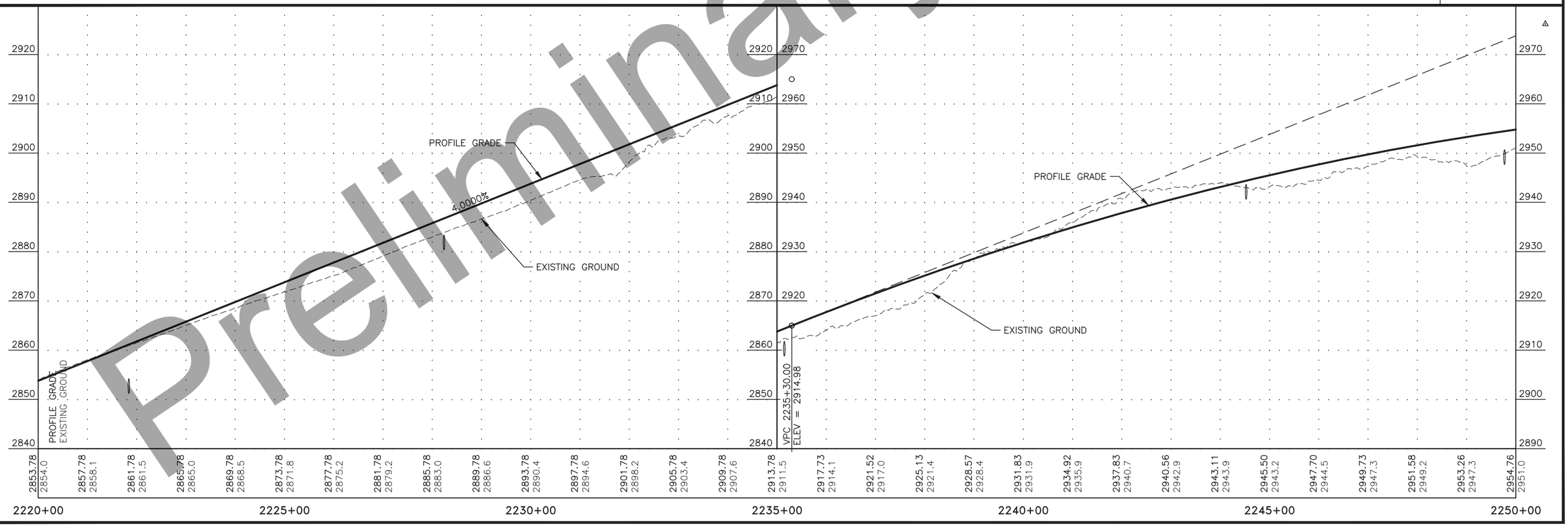
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F9	F14

SHEET NOTES:

1. REMOVE EXISTING HIGHWAY EMBANKMENT DOWN TO EXISTING GROUND.



"01"2242+36.51 PI
Δ = 19°53'06"
D = 1°28'09"
T = 683.65'
L = 1353.54'
R = 3900.00'
S = 4.60 %



STATE OF ALASKA 49TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
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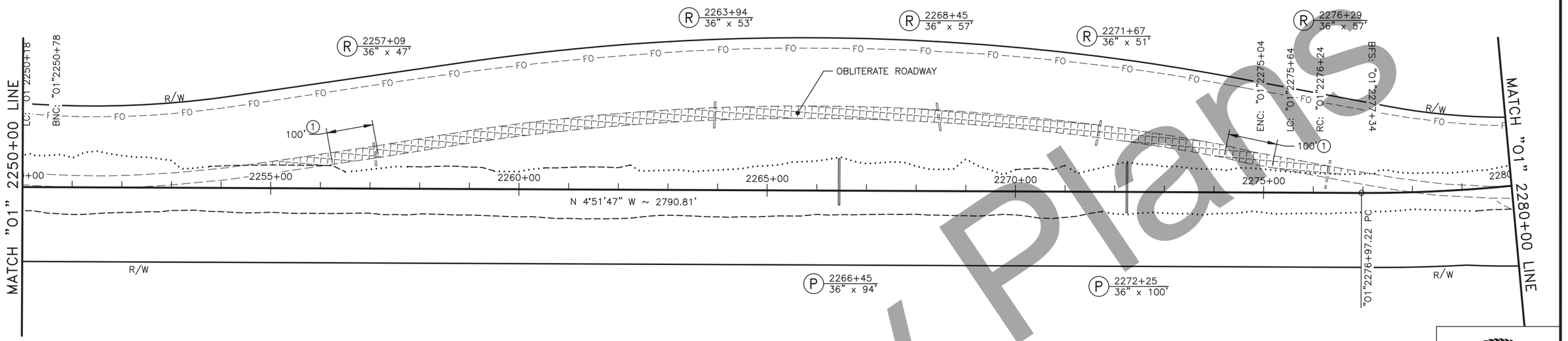
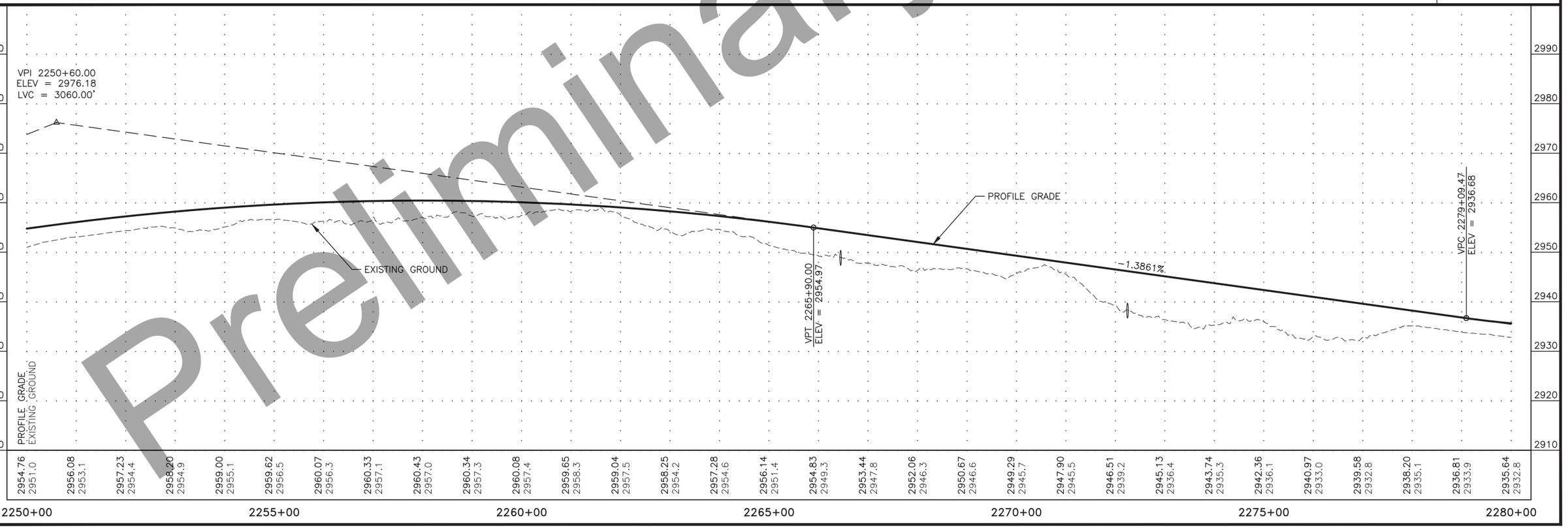
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F10	F14

SHEET NOTES:

① REMOVE EXISTING HIGHWAY EMBANKMENT DOWN TO EXISTING GROUND.



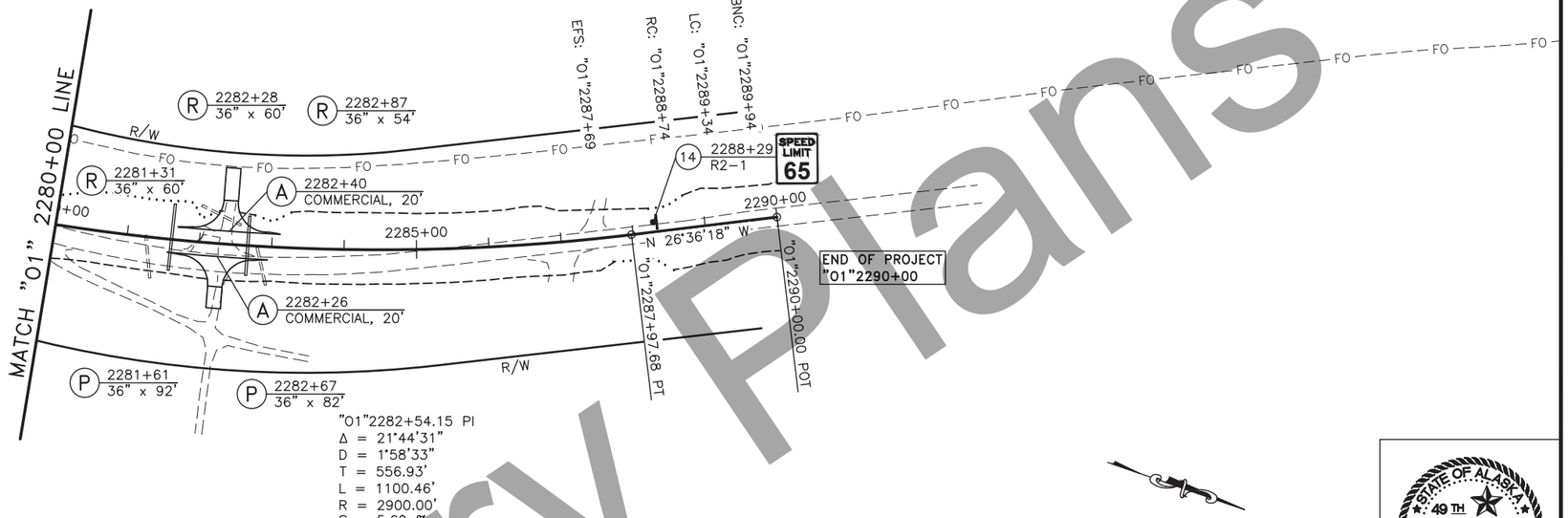


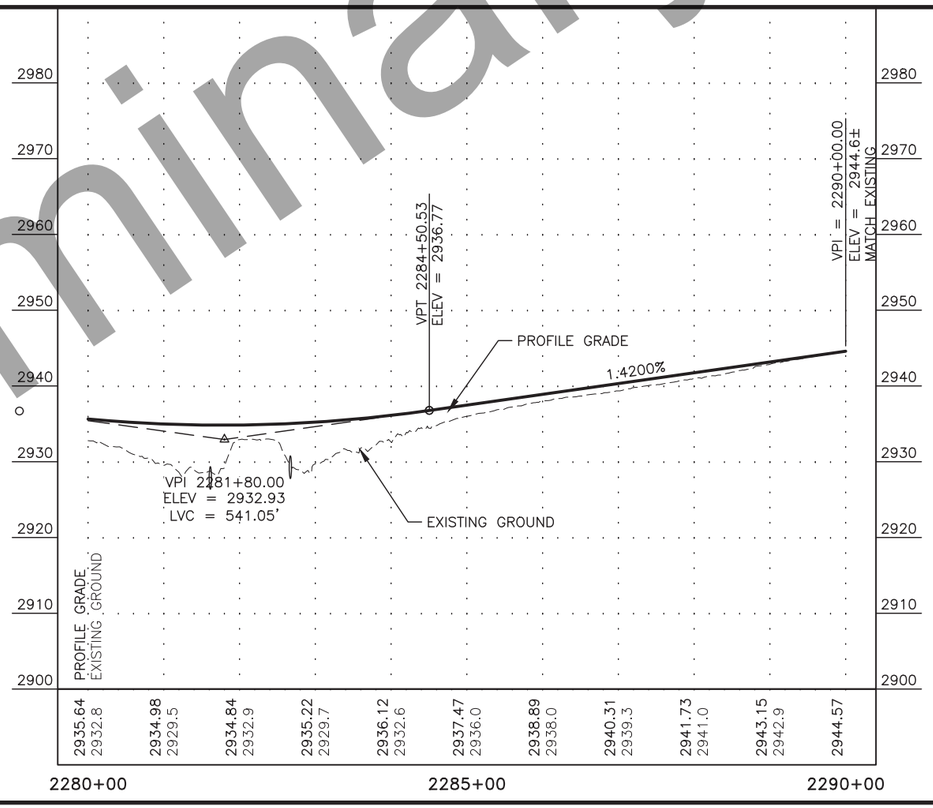
STATE OF ALASKA 49 TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\631186_F_P&P-F10 Fri, Mar/11/22 09:36am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F11	F14





STATE OF ALASKA 49 TH
DUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE, SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
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NO.	DATE	REVISION

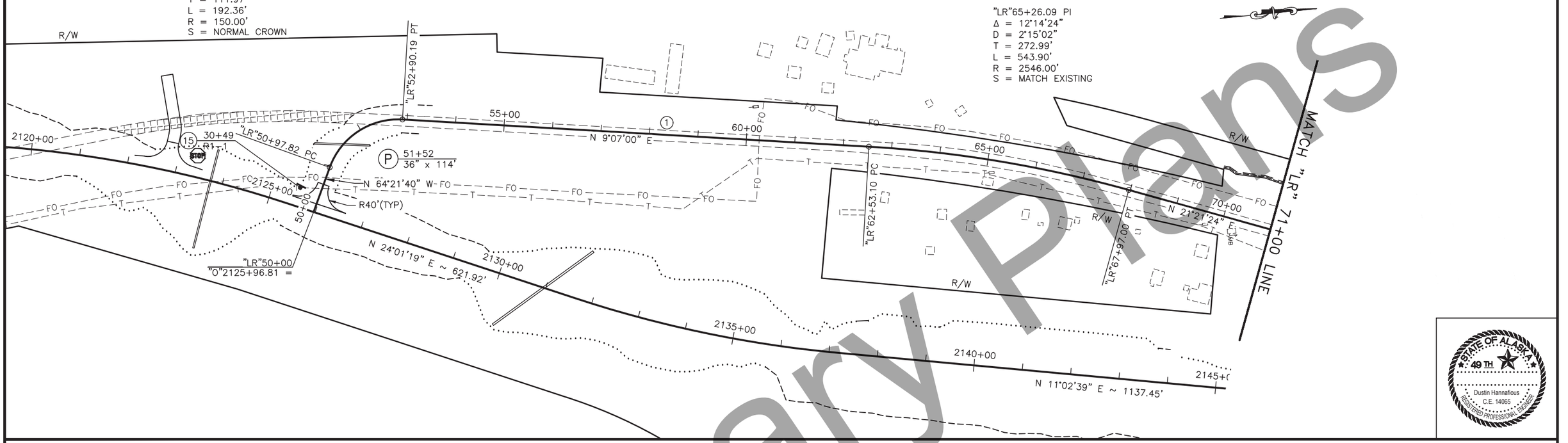
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F12	F14

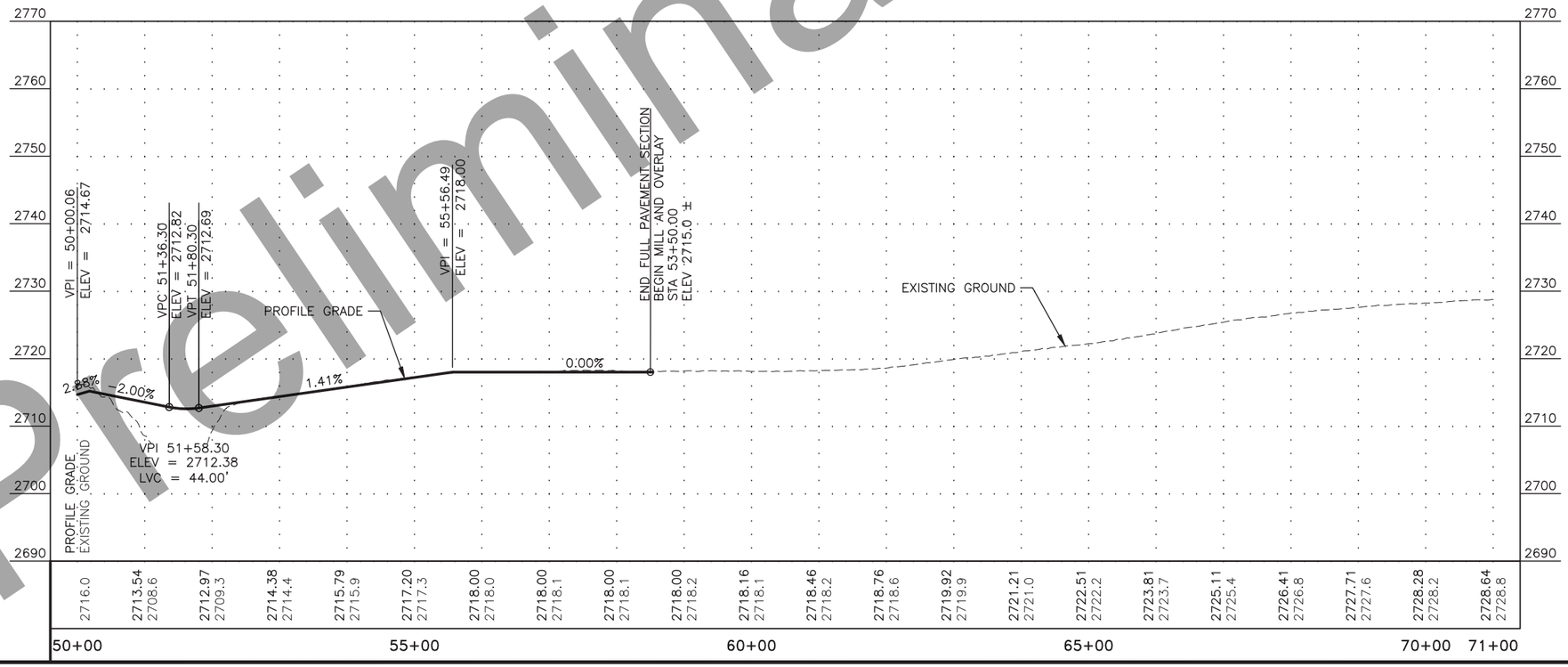
SHEET NOTES:

① ADJUST HORIZONTAL ALIGNMENT TO MATCH EXISTING CENTERLINE BETWEEN STATION 54+00 AND 79+00.

"LR"52+09.79 PI
Δ = 73°28'41"
D = 38°11'50"
T = 111.97'
L = 192.36'
R = 150.00'
S = NORMAL CROWN

"LR"65+26.09 PI
Δ = 12°14'24"
D = 2°15'02"
T = 272.99'
L = 543.90'
R = 2546.00'
S = MATCH EXISTING





STATE OF ALASKA 49TH
Dustin Hannafious
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

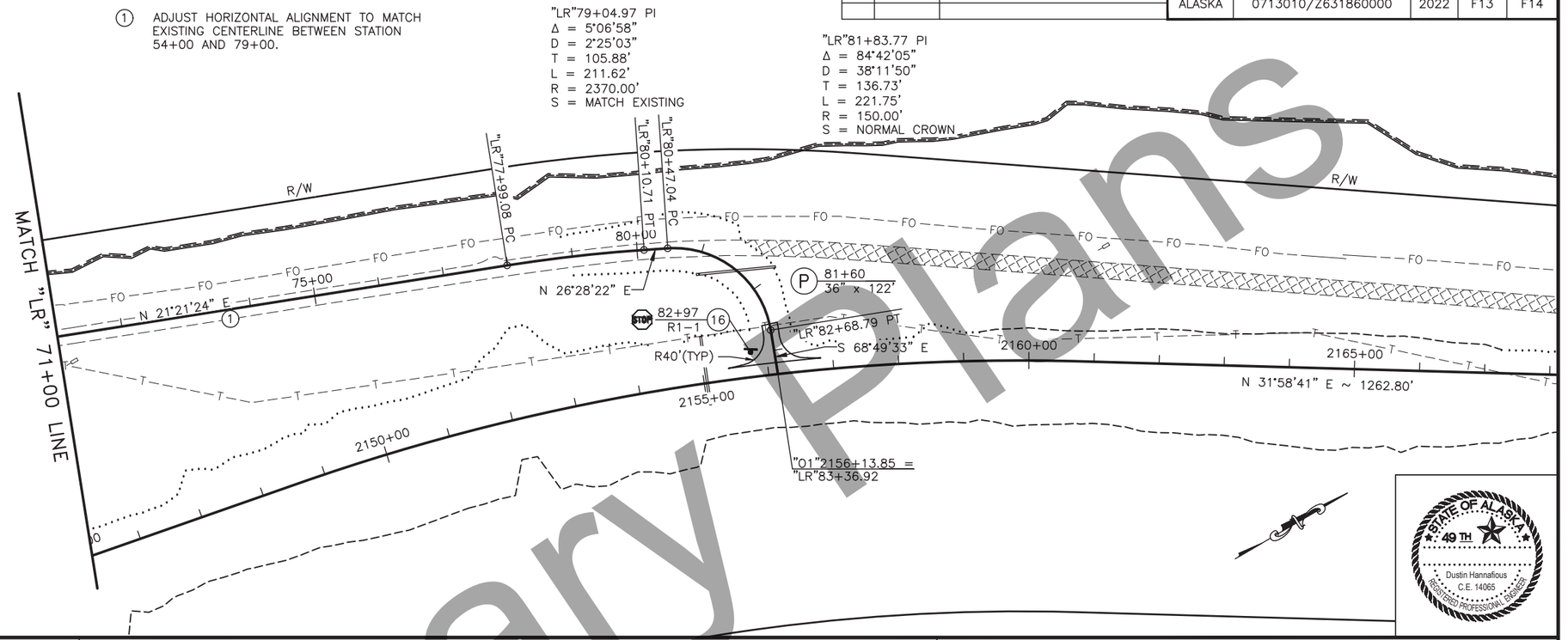
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_F_P&P-Loop Road-F12 Fri, Mar/11/22 09:36am

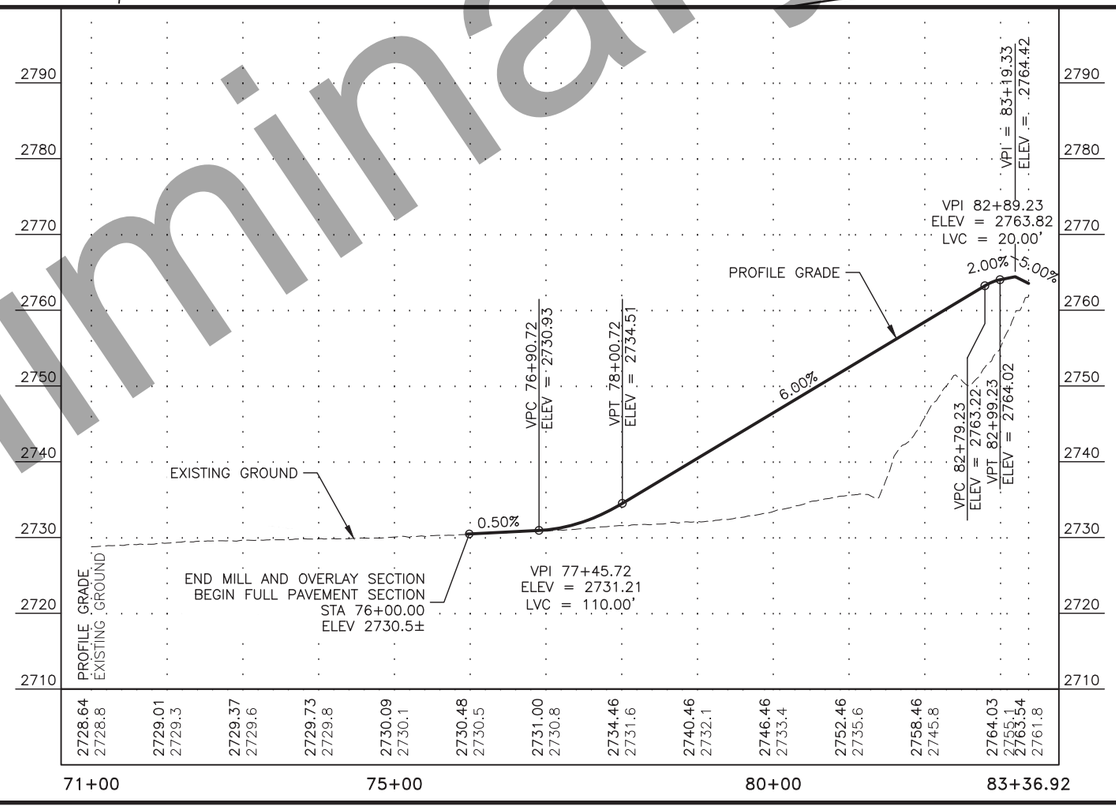
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F13	F14

SHEET NOTES:

1. ADJUST HORIZONTAL ALIGNMENT TO MATCH EXISTING CENTERLINE BETWEEN STATION 54+00 AND 79+00.





STATE OF ALASKA 49 TH
Dustin Hannafious
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_F_P&P-Loop Road-F13 Fri, Mar/11/22 09:36am

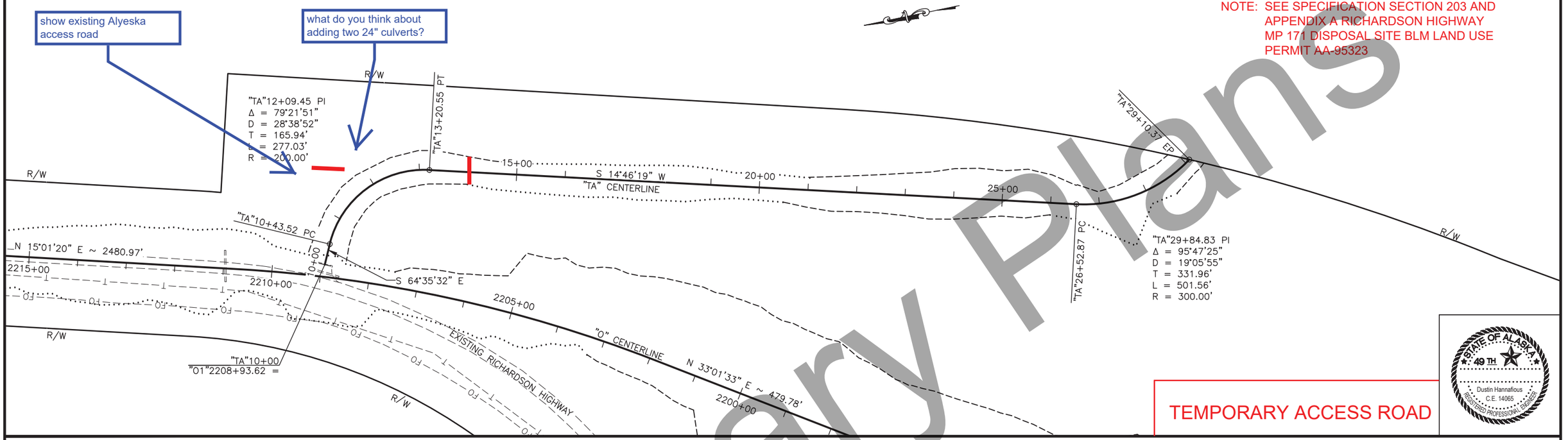
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	F14	F14

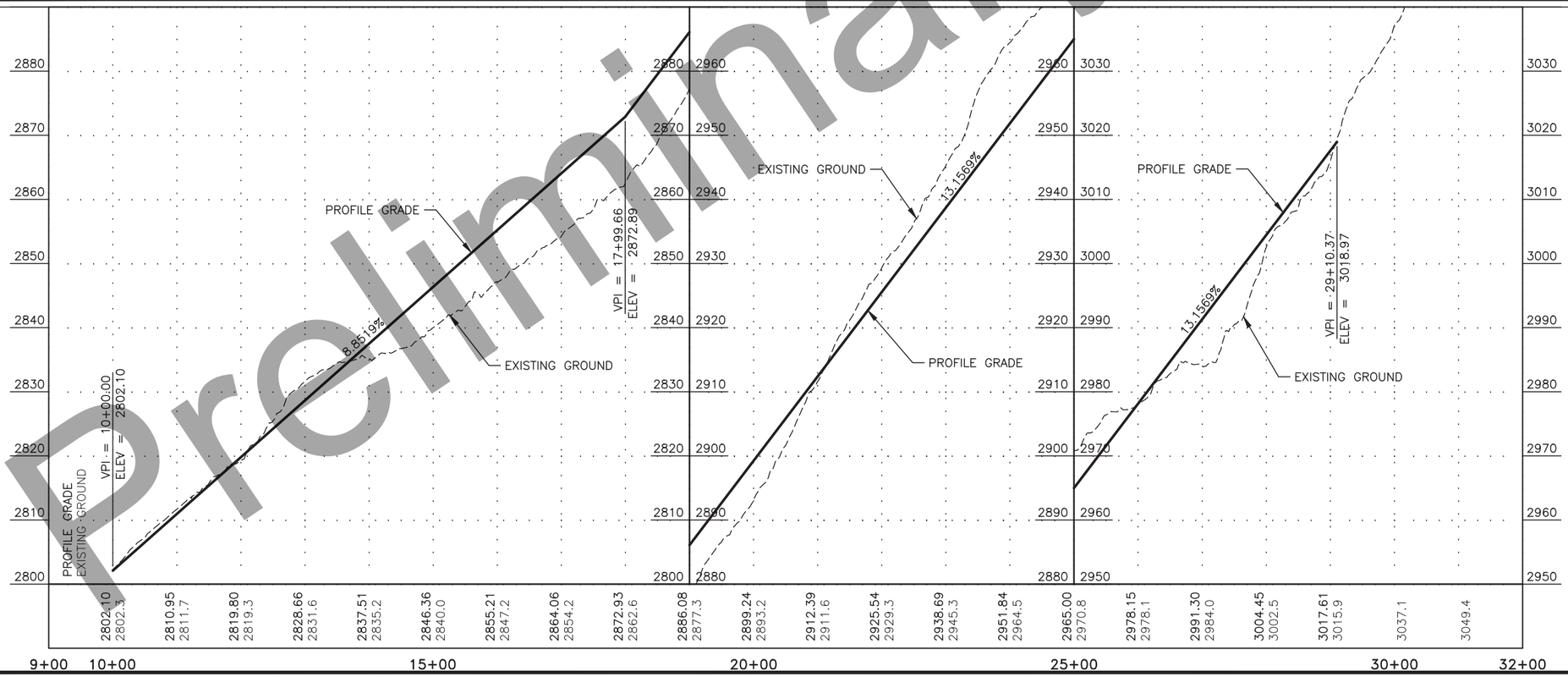
show existing Alyeska access road

what do you think about adding two 24" culverts?

NOTE: SEE SPECIFICATION SECTION 203 AND APPENDIX A RICHARDSON HIGHWAY MP 171 DISPOSAL SITE BLM LAND USE PERMIT AA-95323



TEMPORARY ACCESS ROAD



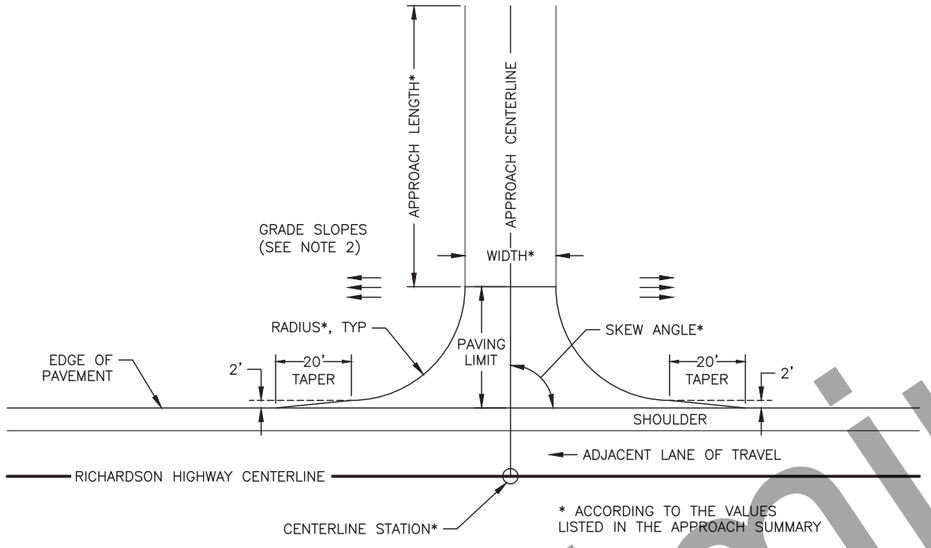
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_F_P&P-Loop Road-F14 Fri, Mar/11/22 09:37am

NO.	DATE	REVISION

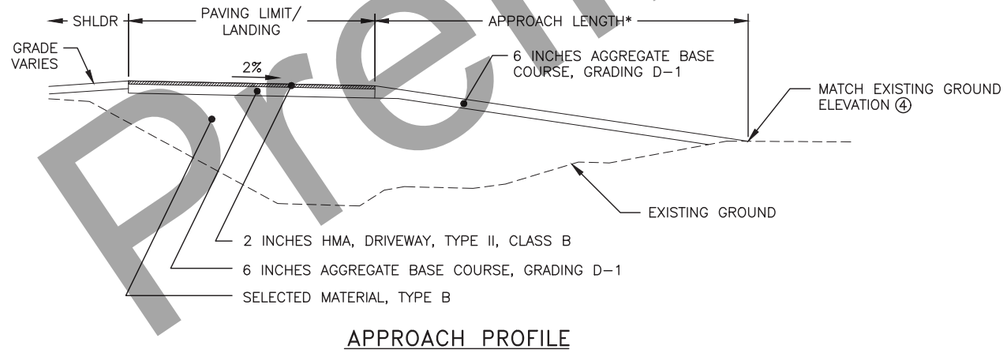
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	G1	G4

APPROACH SUMMARY

APPROACH	CENTERLINE STATION	LT	RT	SKEW ANGLE (DEG)	WIDTH (FT)	RADIUS (FT) ⑤	APPROACH LENGTH (FT)	639.2000.0000 APPROACH	REMARKS
A1	"01" 2037+27	X		90	20	20	80	X	
A2	"01" 2103+00	X		90	30	40	50	X	MEIERS LAKE PIT
A3	"01" 2117+90		X	90	20	20	40	X	
A4	"01" 2122+83	X		90	24	40	140	X	
A5	"01" 2208+82		X	90	28	40	64	X	ALYESKA PIPELINE ACCESS ROAD
A6	"01" 2282+26		X	90	20	40	30	X	ALYESKA PIPELINE ACCESS ROAD
A7	"01" 2282+40	X		90	20	40	45	X	



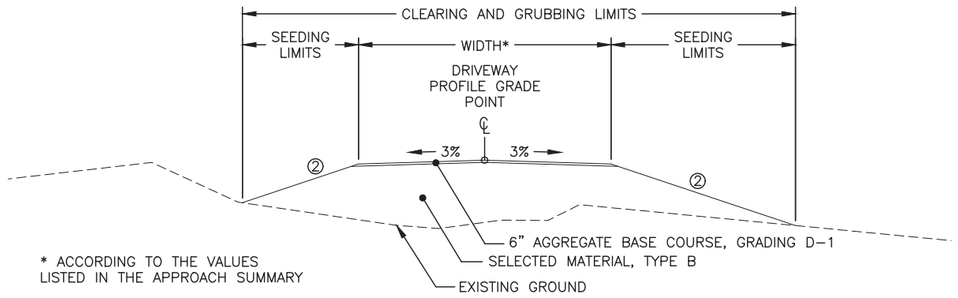
APPROACH PLAN VIEW



APPROACH PROFILE

APPROACH DETAIL NOTES:

1. REMOVAL OF EXISTING APPROACH EMBANKMENT WILL NOT BE MEASURED FOR PAYMENT AND IS SUBSIDIARY TO THE 639.2000.0000 PAY ITEM.
② APPROACH FILL SLOPES SHALL BE 6:1 (H:V) PARALLEL TO THE ROADWAY BETWEEN THE SHOULDER AND THE PAVING LIMIT. BEYOND THE PAVING LIMIT, WARP EMBANKMENT SLOPES FROM 6:1 (H:V) TO 3:1 (H:V) OVER 50 FT OR AS APPROVED BY THE ENGINEER. GRADING OF SLOPES IS SUBSIDIARY TO PAY ITEM 639.2000.0000.
3. CONSTRUCT THE DRIVEWAY TO THE SPECIFIED PROFILE GRADE AND TYPICAL SECTION ALONG THE DRIVEWAY CENTERLINE. WARP CROSS-SLOPES TO MATCH INTO THE SHOULDER OF RICHARDSON HIGHWAY.
④ BLEND AND GRADE FOR A SMOOTH TRANSITION BETWEEN THE DRIVEWAY AND THE EXISTING GROUND.
⑤ APPROACH RADIUS BEGINS AT END OF TAPER.
6. ENSURE POSITIVE DRAINAGE AWAY FROM THE ROADWAY AND DRIVEWAY EMBANKMENTS.
7. DRIVEWAY AND APPROACH TERMS ARE USED INTERCHANGEABLY.
8. APPROACH GRADES SHALL NOT EXCEED 8%.
9. SEE E SHEETS FOR CULVERT SUMMARY AND CROSS CULVERT INFORMATION.
10. SEE SHEETS G2 - G3 FOR APPROACH LAYOUTS.



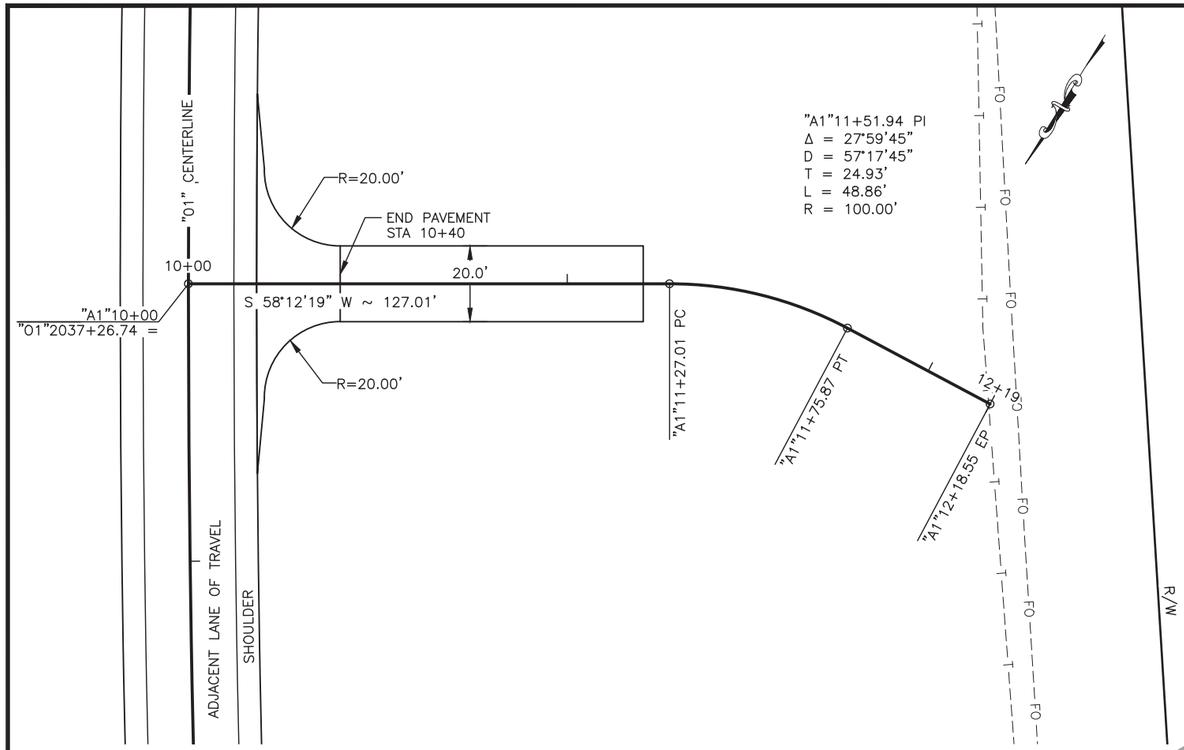
APPROACH TYPICAL SECTION

APPROACH DETAILS

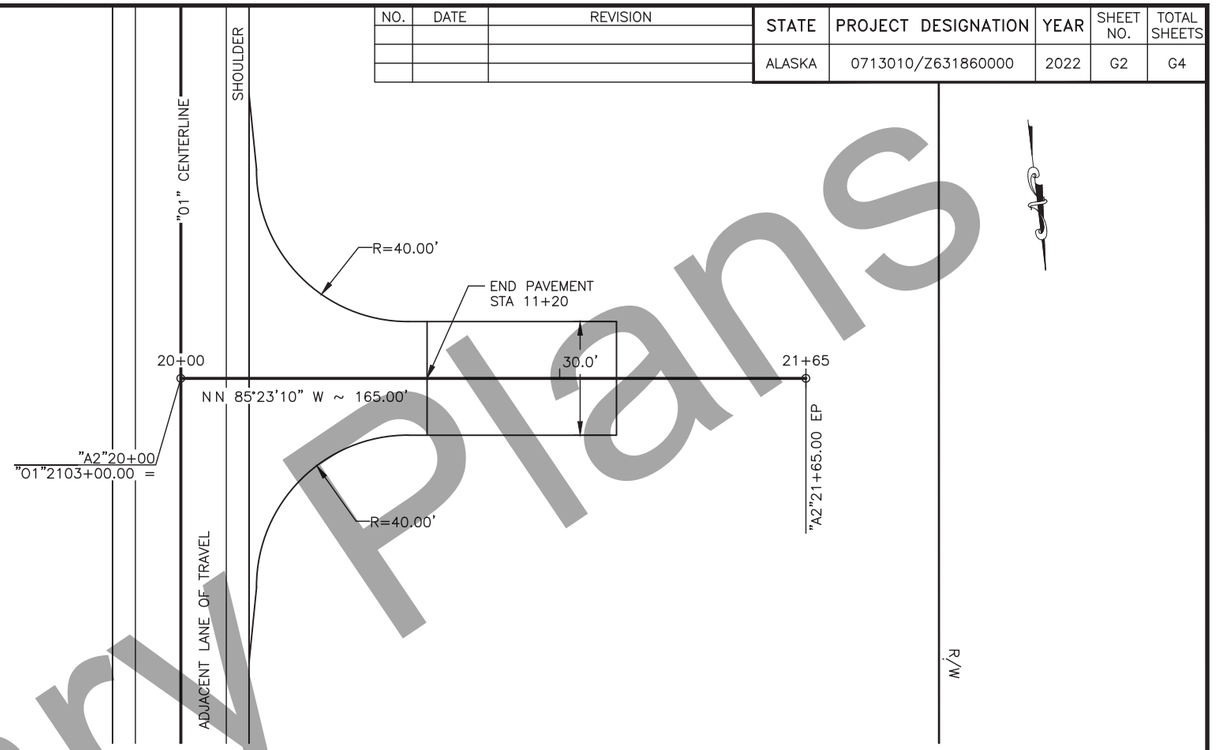
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_G_GRADING-Approach Details Fri, Mar/11/22 09:37am

NO.	DATE	REVISION

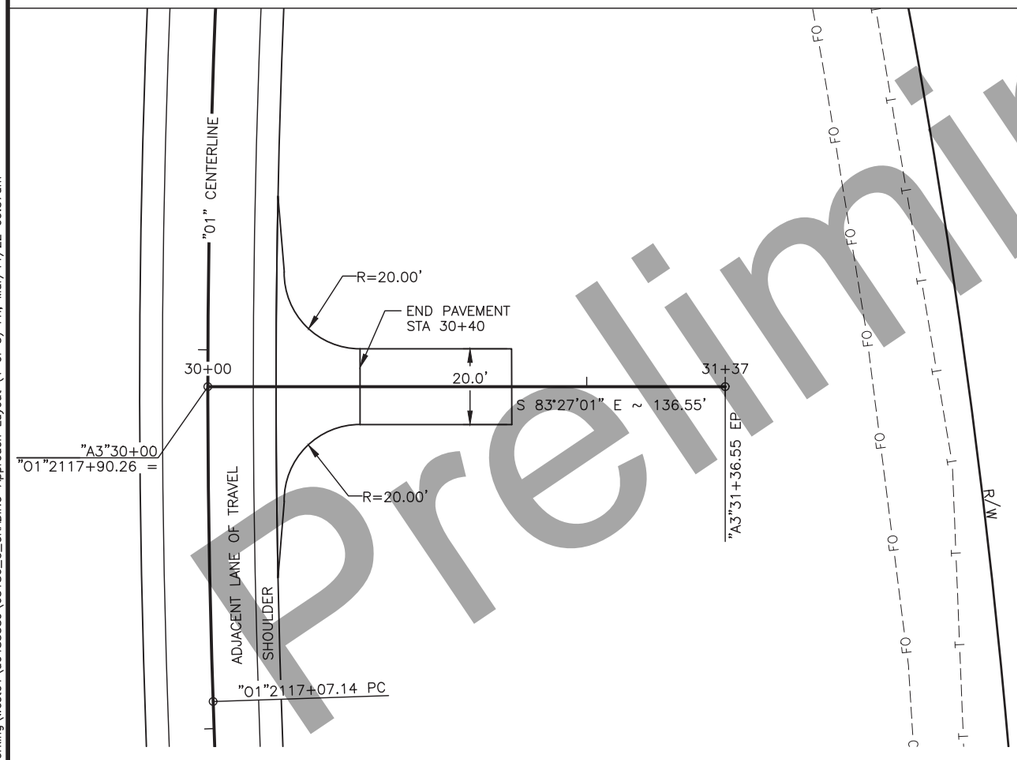
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	G2	G4



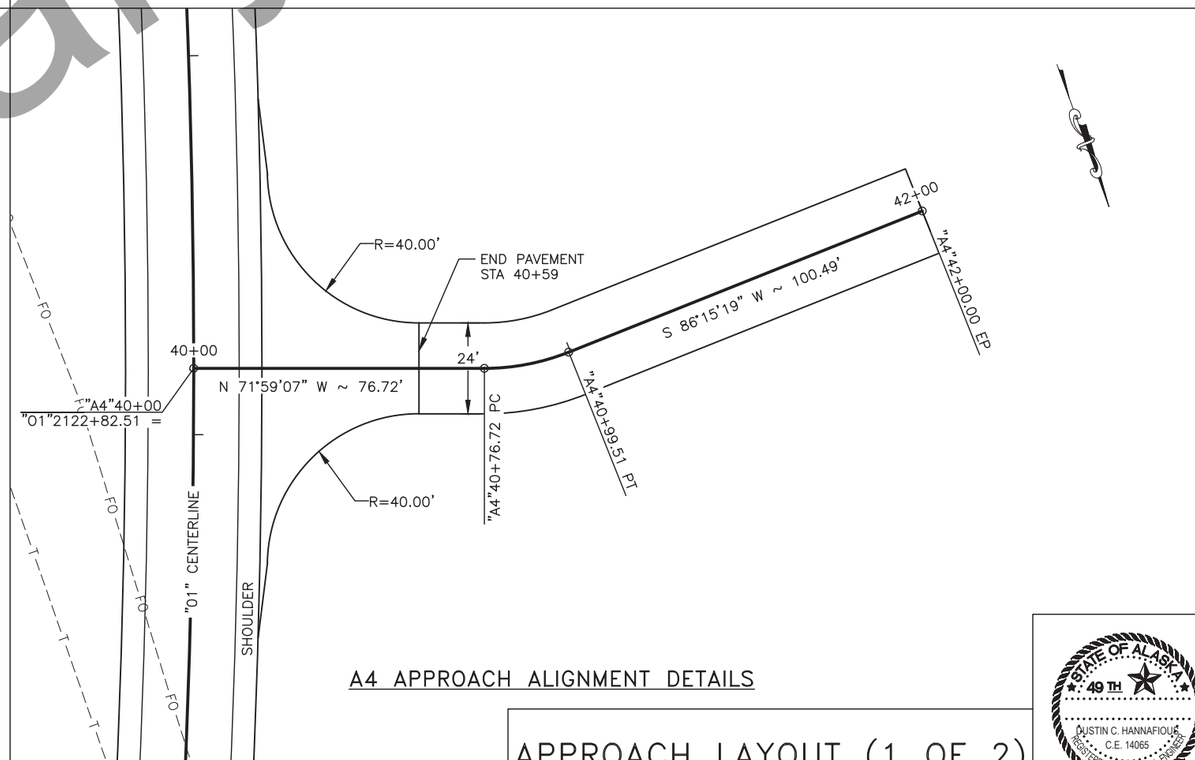
A1 APPROACH ALIGNMENT DETAILS



A2 APPROACH ALIGNMENT DETAILS



A3 APPROACH ALIGNMENT DETAILS



A4 APPROACH ALIGNMENT DETAILS

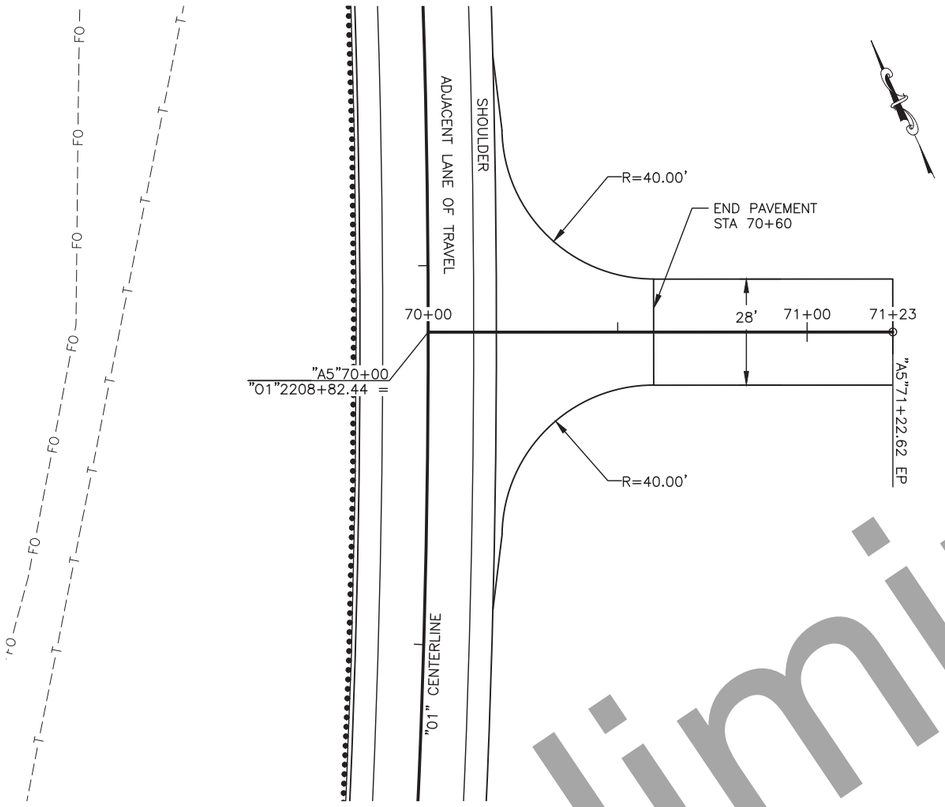
APPROACH LAYOUT (1 OF 2)

STATE OF ALASKA
49 TH
JUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

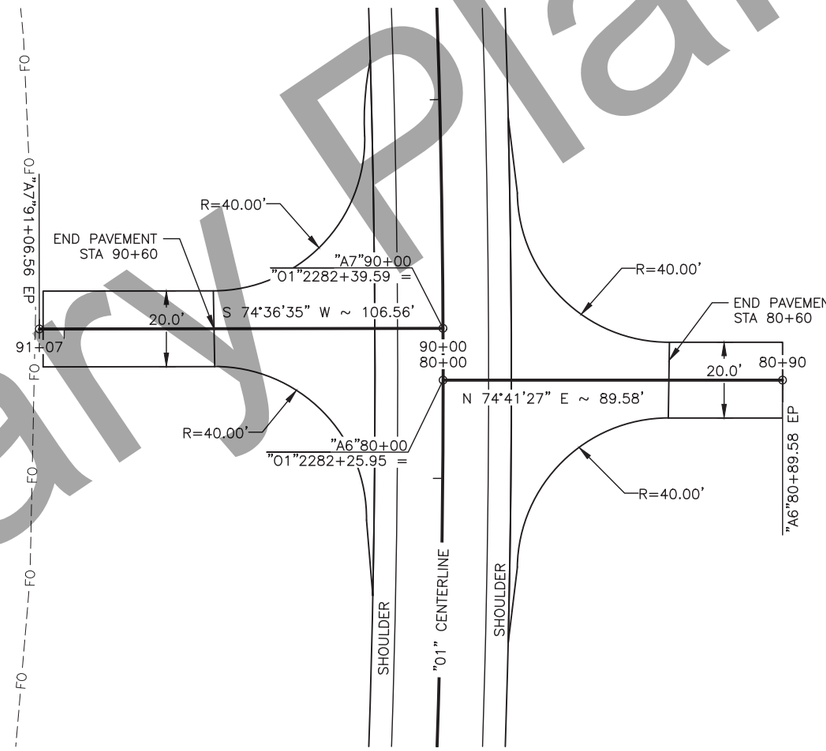
PLANS DEVELOPED BY: HDR ENGINEERING INC., 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_G_GRADING-Approach Layout (1 of 3) Fri, Mar/11/22 09:37am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	G3	G4



A5 APPROACH ALIGNMENT DETAILS



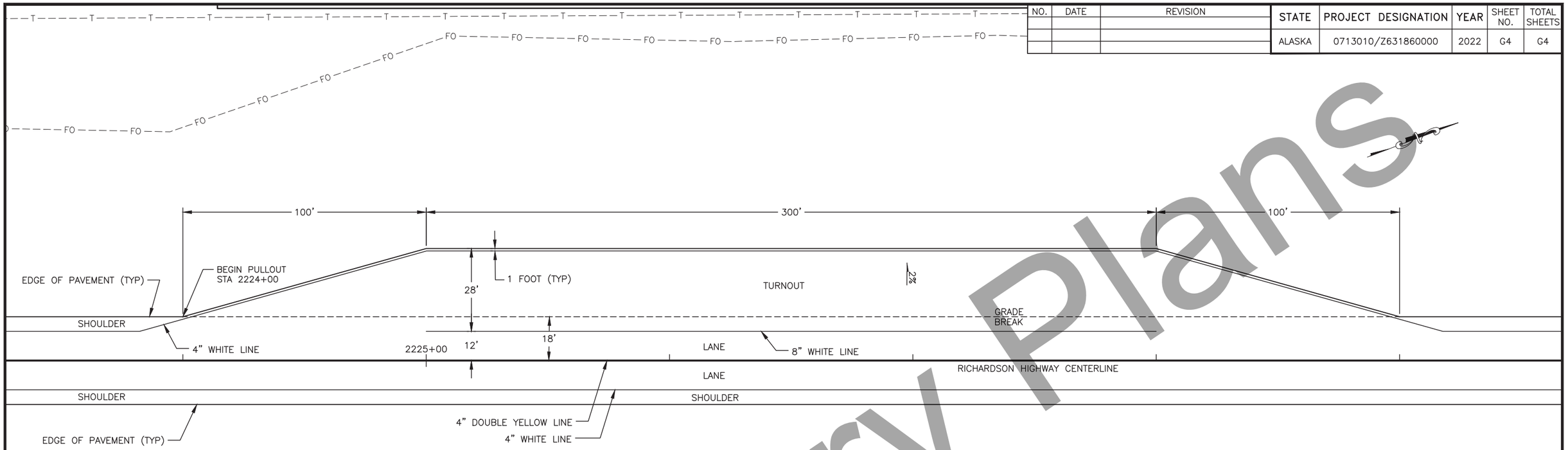
A6 & A7 APPROACH ALIGNMENT DETAILS

APPROACH LAYOUT (2 OF 2)

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_G_GRADING-Approach Layout (3 of 3) Fri, Mar/11/22 09:37am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	G4	G4



STA 2225+00 TURNOUT DETAILS

TURNOUT DETAILS

STATE OF ALASKA
49 TH
JUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_G_GRADING-Turnout Details Fri, Mar/11/22 09:37am

NO.	DATE	REVISION

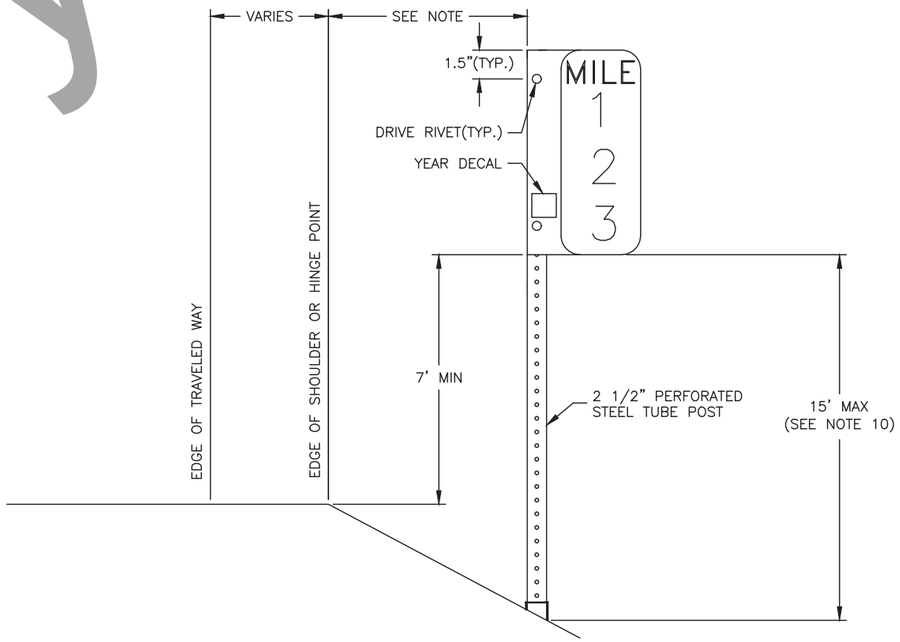
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	H1	H2

SIGNING SUMMARY

LOC. NO.	STATION	LOCATION RT.	LOCATION LT.	ASDS CODE	LEGEND	SIZE H X V (INCHES)	BRACING/ FRAMING BRACED	BRACING/ FRAMING FRAMED	AREA (SQ.FT.)	MTG. HGT. (FT.)	DIR.	POST TYPE	POST SIZE (INCHES)	POST NO.	REMARKS
1	"O"2032+71	X		D10-203	MILE 168	14 X 27			2.63	11.1	N&S	PST	2.5	1	SEE SHEET F2
2	"O"2068+05	X		D3-2	MEIERS LAKE	36 X 78	X		19.50	13.3	S	PST	2.5	2	SEE SHEET F3
				D9-7	GAS	18 X 18			2.25	10.3					
				D9-8	FOOD				2.25						
				D9-9	LODGING				2.25						
				RM-070	GROCERY STORE				2.25						
				D9-3a	TRAILER CAMPING				2.25						
3	"O"2085+51	X		D10-203	MILE 169	14 X 27			2.63	11.1	N&S	PST	2.5	1	SEE SHEET F4
4	"O"2103+91	X		D14-100	ADOPT A HIGHWAY	30 X 36			7.50	9.3	S	PST	2.5	1	SEE SHEET F5
5	"O"2117+35		X	R2-1	SPEED LIMIT 65	30 X 36			7.50	9.3	N	PST	2.5	1	SEE SHEET F5
6	"O"2120+94	X		D1-1	<- Meiers Lake	24 X 84			14.00	11.1	S	PST	2.5	2	SEE SHEET F5
7	"O"2138+45	X		D10-203	MILE 170	14 X 27			2.63	11.1	N&S	PST	2.5	1	SEE SHEET F6
8	"O"2161+06		X	D1-1	Meiers Lake ->	24 X 84			14.00	11.1	N	PST	2.5	2	SEE SHEET F7
9	"O"2162+34	X		R2-1	SPEED LIMIT 65	30 X 36			7.50	11.1	S	PST	2.5	1	SEE SHEET F7
10	"O"2167+11		X	D14-100	ADOPT A HIGHWAY	30 X 36			7.50	11.1	N	PST	2.5	1	SEE SHEET F7
11	"O"2191+21	X		D10-203	MILE 171	14 X 27			2.63	11.1	N&S	PST	2.5	1	SEE SHEET F8
12	"O"2068+05		X	D3-2	MEIERS LAKE	36 X 78	X		19.50	13.3	N	PST	2.5	2	SEE SHEET F8
				D9-7	GAS	18 X 18			2.25	10.3					
				D9-8	FOOD				2.25						
				D9-9	LODGING				2.25						
				RM-070	GROCERY STORE				2.25						
				D9-3a	TRAILER CAMPING				2.25						
13	"O"2244+00	X		D10-203	MILE 172	14 X 27			2.63	11.1	N&S	PST	2.5	1	SEE SHEET F9
14	"O"2288+33		X	R2-1	SPEED LIMIT 65	30 X 36			7.50	11.5	N	PST	2.5	1	SEE SHEET F11
15	"ML"10+38		X	R1-1	STOP	36 X 36			9.00	11.1	W	PST	2.5	1	SEE SHEET F12
16	"ML"42+98	X		R1-1	STOP	36 X 36			9.00	11.1	W	PST	2.5	1	SEE SHEET F14
								TOTAL =	158.15						

SIGNING NOTES:

1. LOCATE AND PROTECT ALL NEW AND EXISTING UNDERGROUND UTILITIES, INCLUDING BUT NOT LIMITED TO, FIBER OPTIC AND TELEPHONE CABLES PRIOR TO INSTALLING SIGN POSTS. NOT ALL EXISTING UTILITIES MAY BE SHOWN ON THE PLANS.
2. MAINTAIN EXISTING SIGNS UNTIL NEW SIGNS ARE INSTALLED. DO NOT LEAVE DUPLICATE OR CONFLICTING SIGNING AT ANY TIME.
3. REMOVE AND SALVAGE ALL EXISTING SIGNS AND SIGN FOUNDATIONS WITHIN THE PROJECT LIMITS.
4. DELIVER ALL SALVAGED SIGNS TO THE PAXSON MAINTENANCE YARD LOCATED AT MP 186 OF THE RICHARDSON HIGHWAY.
5. MOUNTING HEIGHTS ARE PER SHEET V18 UNLESS OTHERWISE NOTED.
6. DETERMINE POST LENGTHS IN THE FIELD. DO NOT EXTEND POSTS ABOVE TOP OF SIGN.
7. INSTALL PST SIGN POSTS WITH SLEEVE TYPE SOIL EMBEDMENT PER STANDARD DRAWING S-30.04. ATTACH THE SIGN POST TO THE SLEEVE USING GALVANIZED $\frac{3}{8}$" BOLT, NUT, SPLIT LOCK WASHER AND TWO FLAT WASHERS.
8. ATTACH ALL SIGNS TO THEIR SUPPORTS WITH $\frac{3}{8}$" BOLTS, EXCEPT ATTACH UNFRAMED SIGNS TO PST POSTS WITH ALUMINUM DRIVE RIVETS. WIND WASHERS ARE NOT REQUIRED WITH DRIVE RIVETS. INCLUDE SPLIT LOCK WASHERS WHEN BOLTS ARE USED.
9. ALL FASTENER HARDWARE SHALL MEET THE REQUIREMENTS OF THE "FASTENER SPECIFICATION TABLE" ON THIS SHEET.
10. INSTALL MILEPOST SIGNS (D10 SERIES) IN ACCORDANCE WITH SHEET V18, EXCEPT WITH A 15 TO 30 FOOT OFFSET. REDUCE THE OFFSET AS NECESSARY SO THE BOTTOM OF THE SIGN IS NO MORE THAN 15 FEET ABOVE THE GROUND. THE SIGN OFFSET SHALL NOT BE LESS THAN THE OFFSET SHOWN ON SHEET V18.
11. SIGN OFFSET DISTANCES FOR ALL OTHER SIGNS ARE NOT PROVIDED, FOLLOW OFFSET DISTANCES SHOWN ON SHEET V18.
12. THE 4" MOUNTING AREA ON MILEPOST SIGNS SHALL BE BARE ALUMINUM. THIS ELIMINATES THE OPTION OF INSTALLING GREEN REFLECTIVE SHEETING IN THIS AREA AS NOTED IN THE ASDS.
13. ADDITIONAL CLEARING BEYOND WHAT IS COVERED UNDER PAY ITEM 201.0003.0000 MAY BE REQUIRED TO ENSURE ADEQUATE VISIBILITY OF SIGNS. THIS WORK IS SUBSIDIARY TO PAY ITEM 615.0001.0000.

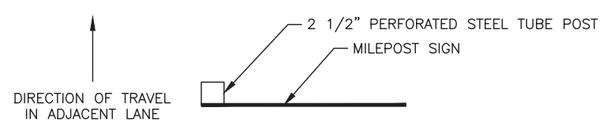


MILEPOST DETAIL
(D10-203)

FASTENER SPECIFICATION TABLE

FASTENERS	STEEL	STAINLESS STEEL
BOLTS	ASTM A 307	ASTM F 593
NUTS	ASTM A 563	ASTM F 594
WASHERS	ASTM A 36	ASTM A 480

THESE SPECIFICATIONS APPLY TO ALL SIGN FASTENER HARDWARE ON THE PROJECT.



MILEPOST MOUNTING DETAIL

SIGN TABLE

PLANS DEVELOPED BY: HDR ENGINEERING INC. 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_H_SIGN STRIPE-Sign Table Fri, Mar/11/22 02:03pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	H2	H2

TRAFFIC MARKING NOTES:

1. TRANSITION BETWEEN NEW AND EXISTING MARKINGS USING A 100:1 TAPER.
2. DISTANCE BETWEEN CENTERLINE AND LANE EDGE LINE IS 12 FEET UNLESS OTHERWISE NOTED. THIS DIMENSION IS TO CENTER OF STRIPE OR STRIPE GROUP.
3. THE STRIPE/SKIP RATIO FOR THIS PROJECT WILL BE 10FT/30 FT. THE PASS/NO-PASS ZONES WILL BE DETERMINED IN THE FIELD BY THE CONTRACTOR ACCORDING TO SECTION 670. THIS WORK IS SUBSIDIARY TO PAY ITEM 670.0001.0000 PAINTED TRAFFIC MARKING.
4. PAVEMENT MARKINGS WILL BE PLACED IN ACCORDANCE WITH STANDARD DRAWING T-21.04 ON SHEET V20 AND SECTION 670.
5. LENGTH OF 4" DOUBLE YELLOW IS BASED ON A CONTINUOUS 4" DOUBLE YELLOW STRIPE THROUGH THE LENGTH OF THE PROJECT. NO ADJUSTMENT WILL BE MADE TO THE 670.0001.000 PAY ITEM FOR DIFFERENCES IN QUANTITY OF YELLOW STRIPE INSTALLED ACCORDING TO 670-3.05, PRELIMINARY SPOTTING
6. SEE TURNOUT DETAILS ON SHEET G4 FOR TURNOUT STRIPING LAYOUT
7. STRIPING SEPARATION DISTANCES SHOWN ARE TO CENTER OF STRIPE.

670.0001.0000 PAINTED TRAFFIC MARKINGS SUMMARY

DESCRIPTION	LENGTH (FT)	REMARKS
4" WHITE	62,000	
8" WHITE	300	SEE TURNOUT DETAIL
4" DOUBLE YELLOW	31,000	SEE NOTES 3 AND 5

STRIPING DETAILS

STATE OF ALASKA 49TH
JUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_H_SIGN STRIPE-Striping Details Fri, Mar/11/22 09:37am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	Q1	Q8

ESCP GENERAL NOTES:

GENERAL:

1. READ AND COMPLY WITH THE CONSTRUCTION GENERAL PERMIT (CGP) AND SECTION 641 OF THE PROJECT SPECIFICATIONS.
2. INITIATE EROSION AND SEDIMENT CONTROLS PRIOR TO ANY EARTH DISTURBING ACTIVITIES.
3. ALL DISTURBED GROUND CAPABLE OF SUPPORTING VEGETATION SHALL BE RE-VEGETATED FOR FINAL STABILIZATION. FINAL STABILIZED AREAS NOT RE-VEGETATED SHALL BE 100% COVERED BY ROCK OR OTHER PERMANENT LOW-ERODIBLE MATERIAL. ATTAINMENT OF FINAL STABILIZATION SHALL BE AS APPROVED IN THE FIELD BY THE ENGINEER.
4. STOCKPILE AND STAGING LOCATIONS SHALL BE RECLAIMED TO THEIR ORIGINAL CONDITION AS APPROVED BY THE ENGINEER.
5. TEMPORARY BMP'S REQUIRED BY THIS ESCP WILL NOT BE MEASURED FOR PAYMENT AND ARE SUBSIDIARY TO PAY ITEM 641.0003.0000.

CULVERTS:

6. PROVIDE TEMPORARY INLET AND OUTLET PROTECTION FOR ALL CULVERTS (EXISTING AND PROPOSED) IN THE AREA OF DISTURBANCE PRIOR TO MAKING THEM OPERATIONAL OR BEGINNING EARTH DISTURBING ACTIVITIES.
7. PERMANENT CULVERT INLET AND OUTLET PROTECTION SHALL BE CULVERT RIPRAP APRONS. SEE THE CULVERT SUMMARY FOR RIPRAP CLASS. SEE E SHEETS FOR CULVERT AND CULVERT RIPRAP APRON INSTALLATION DETAILS.

DITCH PROTECTION AND CONCENTRATED FLOWS:

8. DURING CONSTRUCTION, PROTECT DITCHES TO LIMIT RELEASE OF SEDIMENT. IF DITCH LINING PER THE PLANS IS NOT CONSTRUCTED SIMULTANEOUSLY WITH EMBANKMENT CONSTRUCTION, PROVIDE TEMPORARY DITCH PROTECTION IN THE FORM OF VELOCITY CONTROLS OR TEMPORARY NON-ERODIBLE LINING.
9. EXPOSED MATERIAL OF NEW DITCHES CAPABLE OF SUPPORTING VEGETATION SHALL BE SEEDED OR DITCH LINED PER THE PLANS FOR FINAL STABILIZATION.
10. WHEN POSSIBLE, AVOID CONDITIONS WHICH PROMOTE CONCENTRATED FLOWS. OTHERWISE, INSTALL VELOCITY CONTROL BMPS (I.E. WATTLE CHECK DAMS OR ROCK CHECK DAMS) OR NON-ERODIBLE CHANNEL LINING (I.E. DITCH LINING).

PERIMETER CONTROL:

11. VEGETATIVE BUFFER IS THE PREFERRED PERIMETER PROTECTION FOR THIS PROJECT EXCEPT AT ADJACENT WETLANDS WHERE VEGETATIVE BUFFER WIDTH IS NOT 25 FEET.
12. VEGETATIVE BUFFER ARE NOT APPROPRIATE IN AREAS WITH STANDING WATER OR EMERGENT WETLANDS ADJACENT TO THE IMPACT AREA. IN THESE AREAS, APPROPRIATE BMP SHALL BE INSTALLED TO PREVENT THE ACCUMULATION OF SEDIMENT OUTSIDE OF THE PERMITTED IMPACT AREA.
13. REFERENCE ARMY CORPS PERMIT # POA-2019-00082

HAULING:

14. ENSURE LOADS ARE STABLE OR COVERED SO THAT NO MATERIAL ESCAPEMENT OCCURS DURING HAULING ACTIVITIES.

STOCKPILE PROTECTION:

15. ALL ERODIBLE STOCKPILES MUST BE PROTECTED BY EROSION AND SEDIMENT CONTROL DEVICES.
16. EROSION AND SEDIMENT CONTROL BMPS MAY HAVE TO BE REMOVED AND RE-INSTALLED EACH SHIFT.
17. COVER MUST BE USED ON STOCKPILES IN ACCORDANCE WITH SUBSECTION 641-3.01.5 TO PROVIDE ADDITIONAL EROSION PROTECTION.

IN WATER WORK

18. ALL IN WATER WORK WILL BE ISOLATED FROM FLOWING WATER.

EXCAVATION DEWATERING

19. IF EXCAVATION DEWATERING WILL OCCUR ON THE PROJECT, THE CONTRACTOR WILL COMPLY WITH THE ALASKA DEPARTMENT OF ENVIRONMENTAL CONVERSATION EXCAVATION DEWATERING GENERAL PERMIT AKG0020000. ADEC WRITTEN AUTHORIZATION IS REQUIRED PRIOR TO DISCHARGING.

TIMING OF BMP INSTALLATION:

20. INSTALL EROSION AND SEDIMENT CONTROL BMP'S PRIOR TO THE START OF CONSTRUCTION, AS NECESSARY TO MINIMIZE EROSION FROM DISTURBED SURFACES AND CAPTURE SEDIMENT ONSITE.
21. INSTALL TEMPORARY PERIMETER CONTROL BMP'S BEFORE ANY UP-GRADIENT SOIL DISTURBANCE OCCURS.
22. START PLACEMENT OF DITCH LINING OR OTHER DISSIPATION MEASURES WITHIN 24 HOURS OF PLACEMENT OF THE CULVERT AND COMPLETED IN ON CONTINUOUS OPERATION.

WINTER SHUTDOWN:

23. IF FINAL STABILIZATION IS NOT ACHIEVED BEFORE WINTER SHUTDOWN, EXPOSED GROUND, INCLUDING BUT NOT LIMITED TO EMBANKMENT SLOPES AND STOCKPILES, SHALL BE TEMPORARILY STABILIZED BEFORE WINTER SHUTDOWN AND UNTIL PERMANENT STABILIZATION IS ACHIEVED THE NEXT SEASON. ALL STABILIZATION AND OTHER EROSION CONTROL MEASURES NECESSARY FOR WINTER SHUTDOWN ARE SUBSIDIARY TO PAY ITEM 641.0003.0000.

WETLANDS IN MATERIAL SITES:

24. AVOID IMPACTS OF WETLANDS WITHIN MATERIAL SITES MADE AVAILABLE WITHIN THESE PLANS. IF WETLANDS ARE UNAVOIDABLE, NOTIFY THE ENGINEER AT LEAST 60 DAYS PRIOR TO ANY EARTH DISTURBING ACTIVITY WITHIN THE MATERIAL SITES, AND IDENTIFY ALL POTENTIAL IMPACTS TO WETLANDS WITHIN THE SITE; IDENTIFY WHETHER THESE IMPACTS ARE TEMPORARY OR PERMANENT, AND PROVIDE DETAILED DRAWINGS DELINEATING THE PROPOSED IMPACT AREAS.
25. GRADE MATERIAL SITE FLOOR(S) TO RETAIN ALL WATER WITHIN EACH SITE AND TO AVOID ANY STORM WATER DISCHARGE FROM THE SITES DURING AND AFTER CONSTRUCTION.

PUBLIC WATER SYSTEM:

26. IDENTIFY ANY EXISTING PUBLIC WATER SYSTEM (PWS) DRINKING WATER PROTECTION AREAS (DWPA) THAT INTERSECT THE BOUNDARY OF THE PROPOSED PROJECT/PERMIT AREA USING http://dec.alaska.gov/das/GIS/apps.htm and http://dec.alaska.gov:8080/DWW. PROVIDE PWS CONTACT INFORMATION USING AND ENTERING THE APPROPRIATE 6-DIGIT PWS ID.

EAGLE NESTS:

27. IF EAGLE NEST(S) ARE IDENTIFIED BY DOT&PF OR THE CONTRACTOR STAFF WITHIN 660 FEET OF THE CONSTRUCTION ACTIVITY, THE PROJECT ENGINEER SHALL BE INFORMED AND THE ENGINEER SHALL CONSULT THE USFWS FOR MEASURES TO PROTECT THE NEST FROM DISTURBANCES. WHEN AN EAGLE NEST IS FOUND WITHIN ½ MILE OF THE PROJECT AND HIGH-NOISE LEVEL WORK IS PLANNED (PILE DRIVING FOR EXAMPLE) SEE USFWS NOISE GUIDELINES.

SETTING:

27. CHARACTERIZED BY NEARLY LEVEL TO UNDULATING PLAINS AND ROLLING HILLS, WITH FREQUENT DEPRESSIONAL WETLANDS AND SHALLOW PONDS. THE AREA IS POORLY DRAINED, WITH GENERALLY HIGHLY ORGANIC SOILS OVERLYING DISCONTINUOUS PERMAFROST. THE COPPER RIVER BASIN IS LOCATED IN AN ANCIENT LAKE BED WITH HIGH SILT/CLAY CONTENT. TYPICAL VEGETATION CONSISTS OF TUSSOCKS, TUNDRA GRASSES, BLUEBERRY BUSHES, MOSS, WILLOW, STUNTED SPRUCE, BIRCH AND POPLAR. GROWING SEASON IS SHORT (JUNE TO MID AUGUST).

THREATENED AND ENDANGERED SPECIES

ACCORDING TO THE LIST PUBLISHED AT:
HTTP://WWW.FAKR.NOAA.GOV/PROTECTEDRESOURCES/ESA/AK_SPECIESLST051110.PDF,
THERE ARE NO THREATENED AND ENDANGERED SPECIES LISTED FOR THIS AREA.

WILDLIFE & WATERFOWL REFUGES:

ALL PROJECT WORK WILL TAKE PLACE INSIDE THE EXISTING DOT&PF RIGHT-OF-WAY (ROW)' THE WRANGELL-ST. ELIAS NATIONAL PARK & PRESERVE IS LOCATED SOUTH OF THE PROJECT CORRIDOR. IT'S NORTHERN MOST BOUNDARY IS THE COPPER RIVER WHICH DOES NOT ABUT THE EXISTING DOT&PF RIGHT-OF-WAY. THE WRANGELL-ST. ELIAS NATIONAL PARK & PRESERVE IS A SECTION 4(f) PROTECTED RESOURCE AND NO IMPACTS WILL OCCUR.

PROJECT AREA	105.12 ACRES
DISTURBED AREA	83.27 ACRES
PRE-CONSTRUCTION IMPERVIOUS AREA	17.4666 ACRES
POST-CONSTRUCTION IMPERVIOUS AREA	27.4386 ACRES
PRE-CONSTRUCTION RUNOFF COEFFICIENT	0.6
POST-CONSTRUCTION RUNOFF COEFFICIENT	0.6

NOTE: PROJECT AREA AND DISTURBED AREA CALCULATIONS DO NOT INCLUDE MATERIALS SITES OR ACCESS ROADS TO THOSE SITES.

ENVIRONMENTAL INFORMATION

- RECEIVING WATER BODIES: MEIERS LAKE AND ADJACENT WETLANDS.
- IMPAIRED WATER BODIES: NONE
- TOTAL MAXIMUM DAILY LOAD (TMDL) WATERS: NONE
- THREATENED AND ENDANGERED SPECIES: THIS PROJECT AND ITS SUPPORT AREAS DO NOT CONTAIN ANY KNOWN ESA SPECIES OR HABITAT.
- HISTORIC PLACES: NO HISTORIC PROPERTIES HAVE BEEN IDENTIFIED IN THE PROJECT AREA.
- MIGRATORY BIRD TREATY: ALL CONSTRUCTION ACTIVITIES SHALL COMPLY WITH THE MIGRATORY BIRD TREATY ACT TO PREVENT THE KILLING OR TAKING OF MIGRATORY BIRDS OR ANY PART, NEST, OR EGG OF ANY SUCH BIRDS.
- WETLANDS: SHOWN ON SUBSEQUENT Q SHEETS
- REFER TO APPENDIX A FOR PROJECT SPECIFIC PERMITS AND ENVIRONMENTAL COMMITMENTS DEC HAS NOT IDENTIFIED ANY CONTAMINATE SITES WITHIN 1500 FEET OF THE PROJECT.

GENERAL SITE INFORMATION

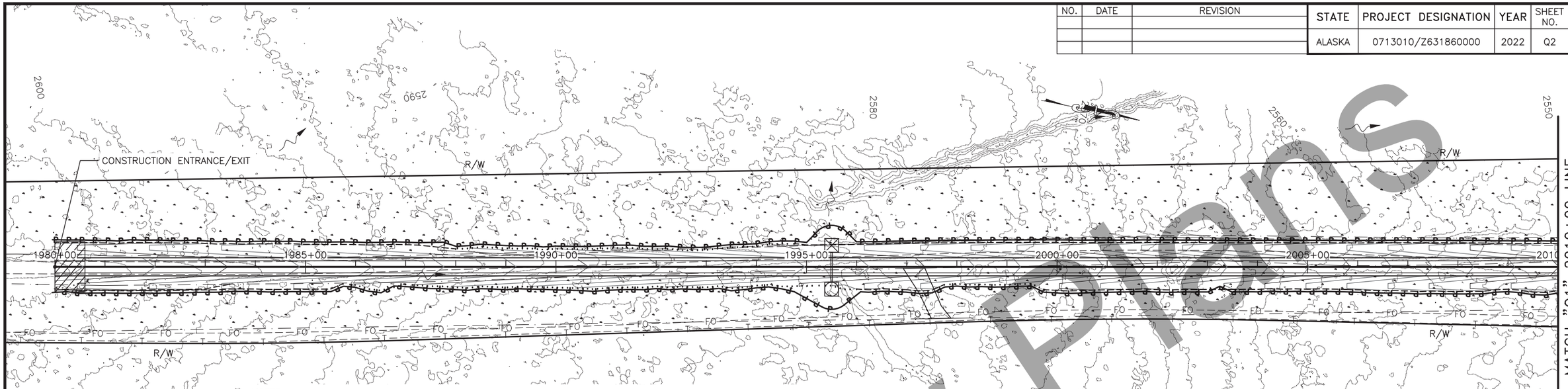
- SITE FUNCTION: ROAD
- CLIMATE: AVERAGE ANNUAL TOTAL PRECIPITATION = 15.91 INCHES (SOURCE: WESTERN REGIONAL CLIMATE CENTER WEBSITE FOR SOURDOUGH 1N (508625), AK), 2-YEAR 24-HOUR PRECIPITATION = 1.08 INCHES (SOURCE: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_ak.html)

EROSION AND SEDIMENT CONTROL NOTES

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_0_ESCP-Q1 Wed, Mar/09/22 01:53pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	Q2	Q8

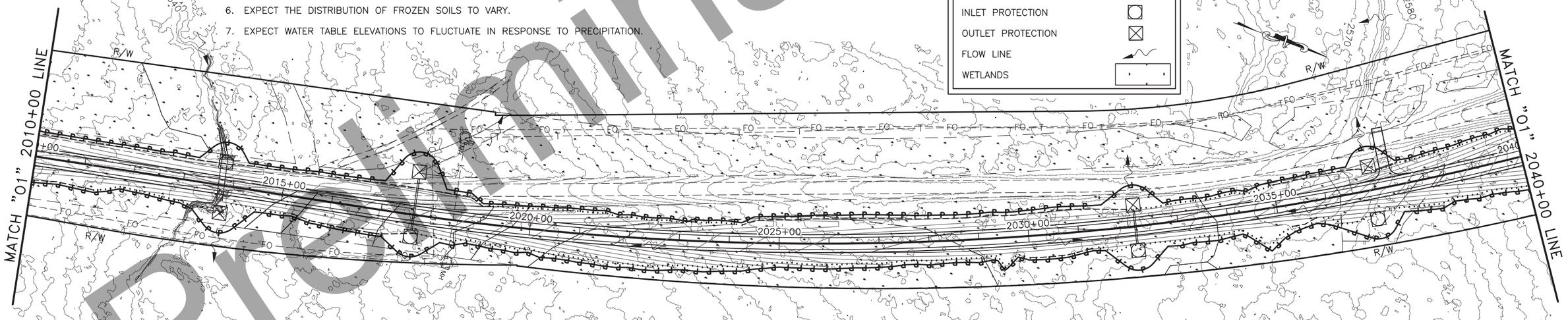


NOTES:

1. VELOCITY CONTROLS INCLUDE WATTLE CHECK DAMS OR ROCK CHECK DAMS OR OTHER METHOD AS APPROVED BY THE ENGINEER. VELOCITY CONTROLS ARE REQUIRED AT LOCATIONS OF HIGH VELOCITY FLOW.
2. IMPLEMENT PRACTICABLE MEASURES AS APPROVED BY THE ENGINEER TO MINIMIZE THE INTRODUCTION OR SPREAD OF NOXIOUS WEEDS INTO OR FROM THE PROJECT SITE. WASHING CONSTRUCTION EQUIPMENT PRIOR TO ENTERING OR LEAVING THE PROJECT SITE IS AN APPROVED MEASURE.
3. INSTALL PERIMETER PROTECTION WHEN WORKING WITHIN 25 FEET OF SURFACE WATER. IF PERIMETER VEGETATIVE BUFFER WIDTH IS INSUFFICIENT, USE TEMPORARY DEVICES AND METHODS.
4. ALL IN WATER WORK MUST BE ISOLATED FROM FLOWING WATER. ISOLATION METHODS INCLUDE:
   - SILT CURTAINS
   - COFFERDAMS
   - OTHER METHODS APPROVED BY THE ENGINEER
5. EXPECT TO ENCOUNTER PERMAFROST AND FROZEN SOILS DURING EXCAVATION ACTIVITIES. BMPs MUST BE IMPLEMENTED TO CONTAIN AND TREAT RUNOFF FROM THAWING OF EXPOSED PERMAFROST AND FROZEN SOILS.
6. EXPECT THE DISTRIBUTION OF FROZEN SOILS TO VARY.
7. EXPECT WATER TABLE ELEVATIONS TO FLUCTUATE IN RESPONSE TO PRECIPITATION.

LEGEND:

- PERIMETER CONTROL
- INLET PROTECTION
- OUTLET PROTECTION
- FLOW LINE
- WETLANDS

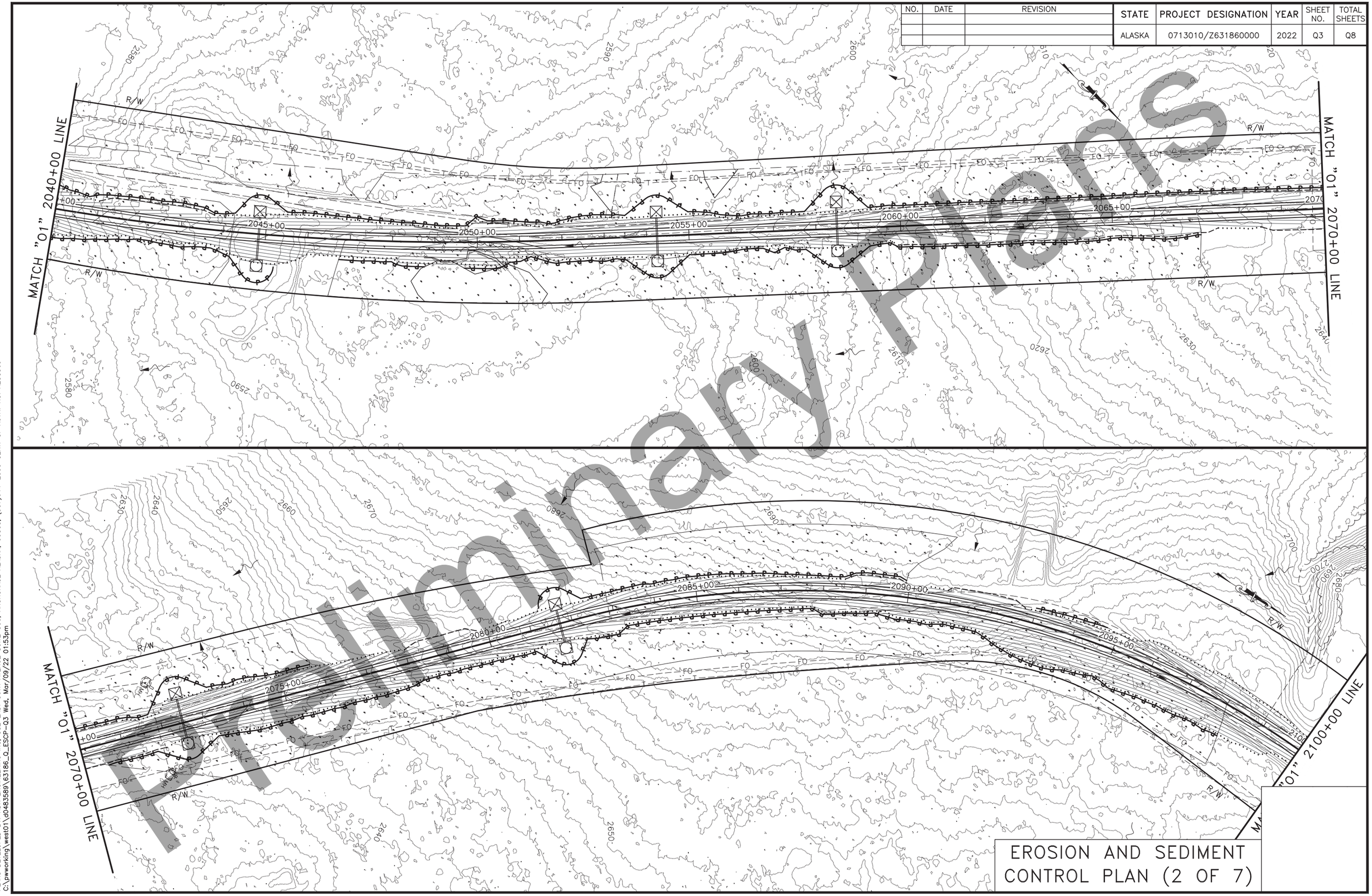


EROSION AND SEDIMENT CONTROL PLAN (1 OF 7)

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_0_ESCP-02 Wed, Mar/09/22 01:53pm

NO.	DATE	REVISION

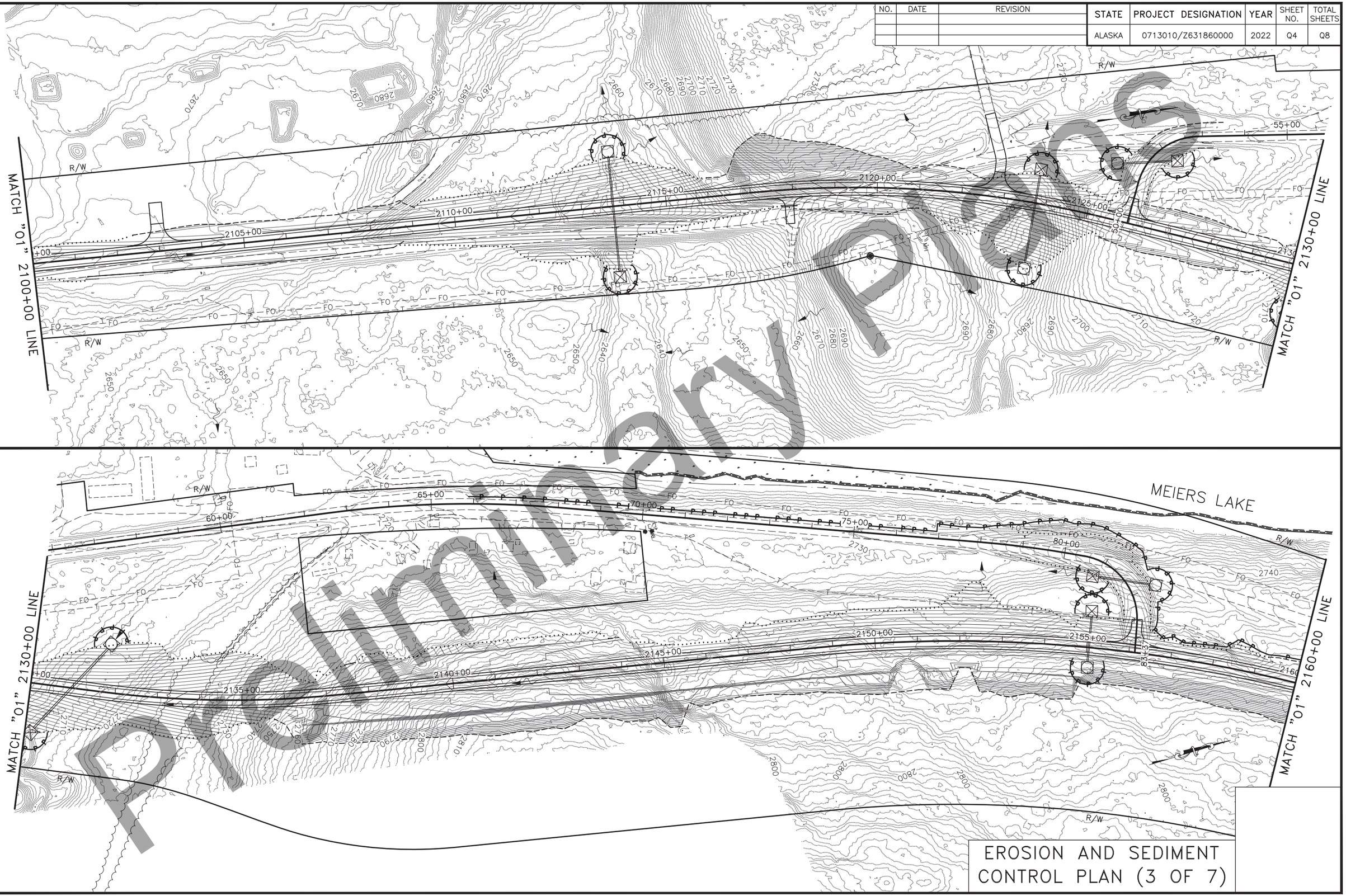
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	Q3	Q8



EROSION AND SEDIMENT CONTROL PLAN (2 OF 7)

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	Q4	Q8



EROSION AND SEDIMENT CONTROL PLAN (3 OF 7)

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_Q_ESCP-Q4 Wed, Mar/09/22 01:53pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	Q5	Q8

MEIERS LAKE

MATCH "01" 2160+00 LINE

MATCH "01" 2190+00 LINE

MATCH "01" 2190+00 LINE

MATCH "01" 2219+98 LINE

R/W

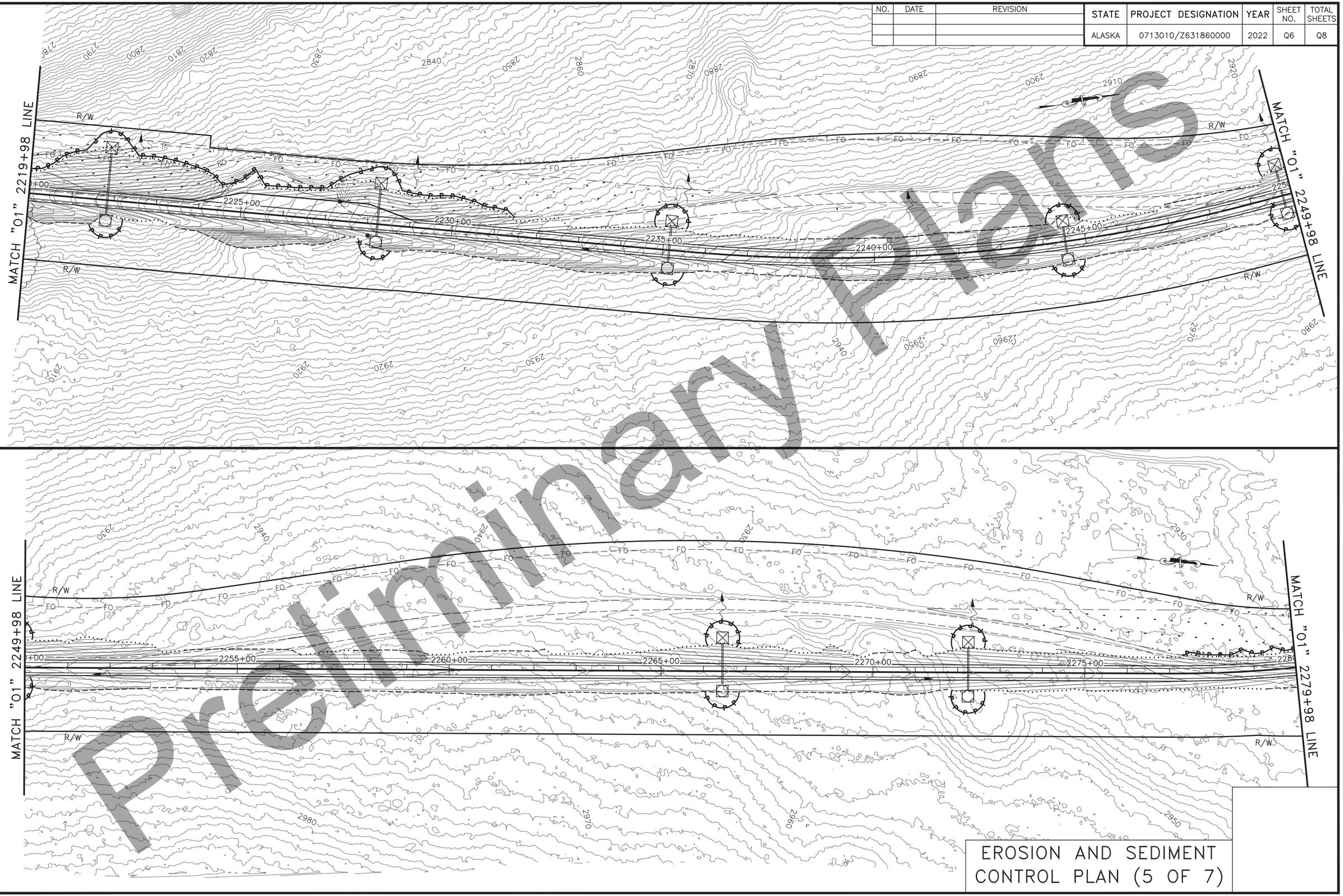
FO

EROSION AND SEDIMENT CONTROL PLAN (4 OF 7)

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_Q_ESCP-Q5 Wed, Mar/09/22 01:53pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	Q6	Q8

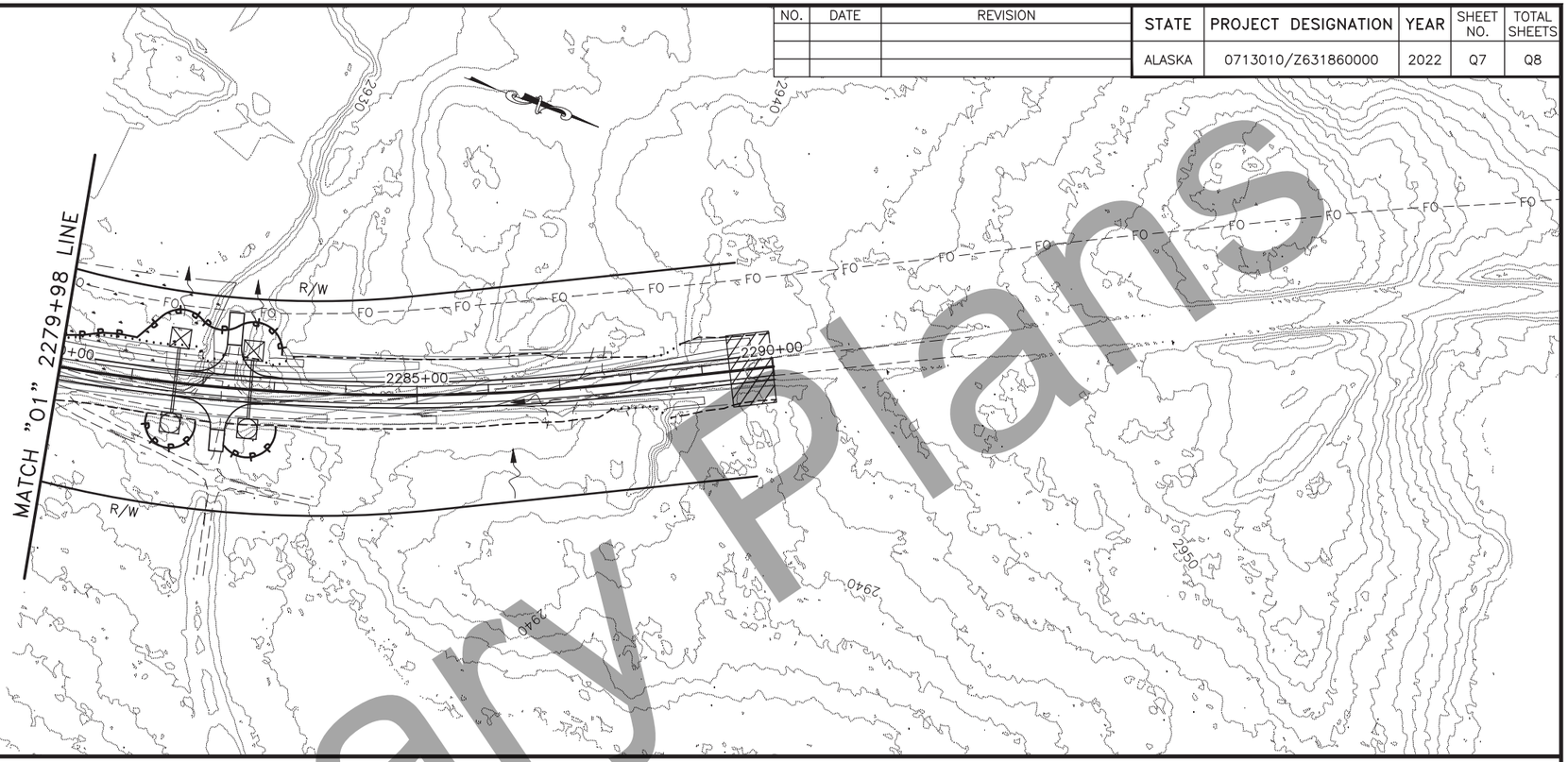


EROSION AND SEDIMENT CONTROL PLAN (5 OF 7)

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\i63186_Q_ESCP-Q6 Wed, Mar/09/22 01:53pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	Q7	Q8

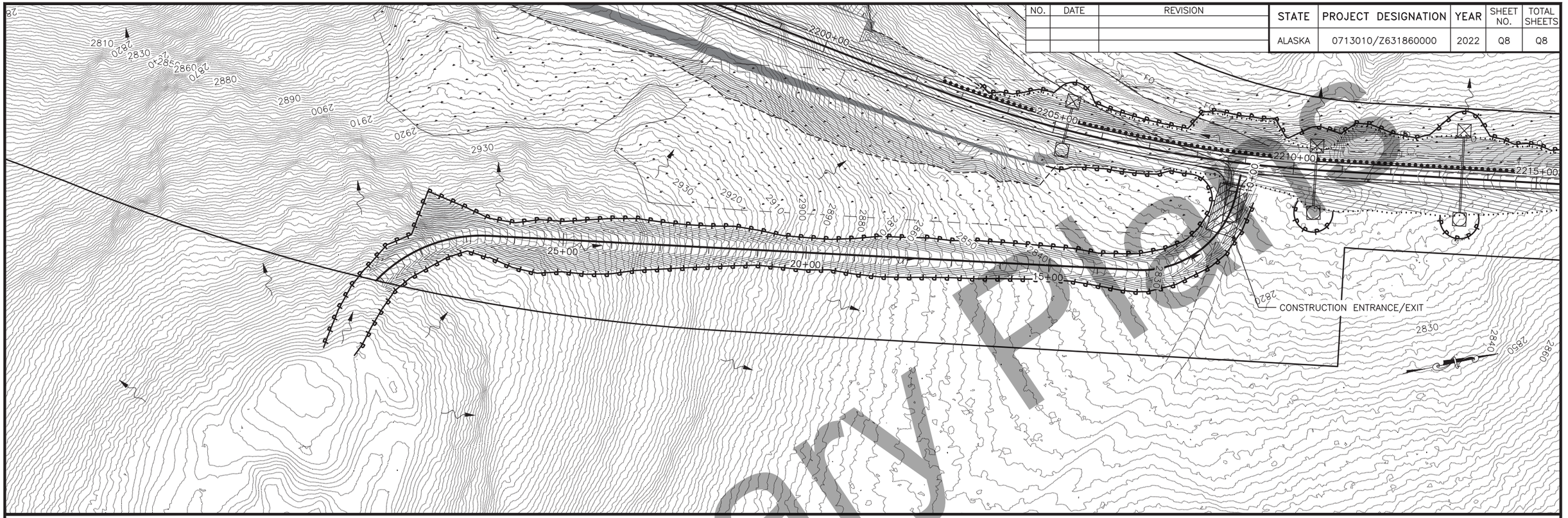


EROSION AND SEDIMENT CONTROL PLAN (6 OF 7)

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_Q_ESCP-Q7 Wed, Mar/09/22 01:54pm

NO.	DATE	REVISION

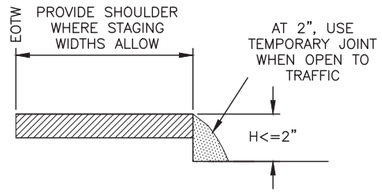
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	Q8	Q8



EROSION AND SEDIMENT CONTROL PLAN (7 OF 7)

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0713010/Z631860000	2022	T1	T1

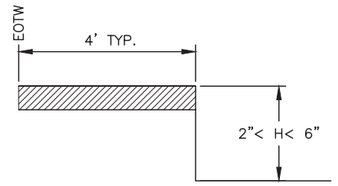
VERTICAL DROP-OFFS



CASE A

DROP-OFFS ≤2 INCHES
(PAVED SURFACES ONLY)

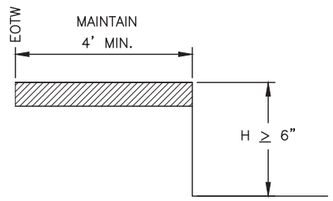
1. USE "UNEVEN LANES" (CW8-11) SIGNS FOR ALL DROP-OFFS IN BETWEEN TRAFFIC LANES.
2. LEAVE NO DROP-OFFS > 1.5" IN THE TRAFFIC LANE OR ACTIVE WHEEL TRACK.



CASE B

2"< DROP-OFFS < 6"
(ALL ROADWAY SURFACES)

1. PLACE CONES OR CANDLES FOR DROP-OFFS ≥ 4 FEET AND ≤ 30 FEET FROM THE EOTW.
2. USE DRUMS OR TYPE II BARRICADES FOR DROP-OFFS < 4 FEET FROM THE EOTW.



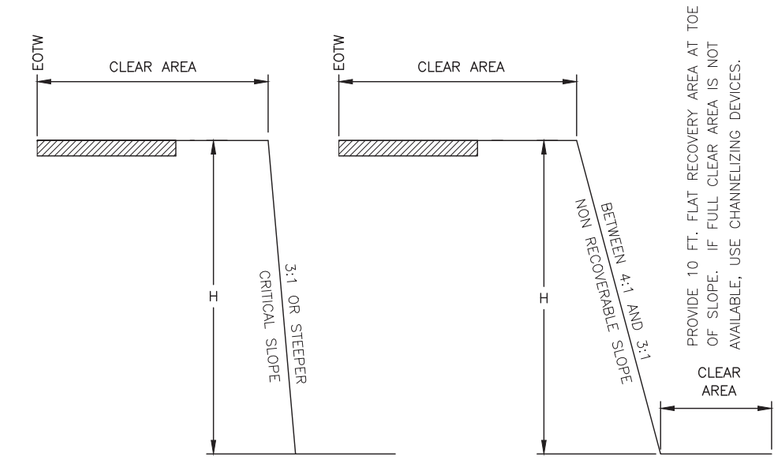
CASE C

DROP-OFFS ≥6"
(ALL ROADWAY SURFACES AND ROADSIDE SLOPES)

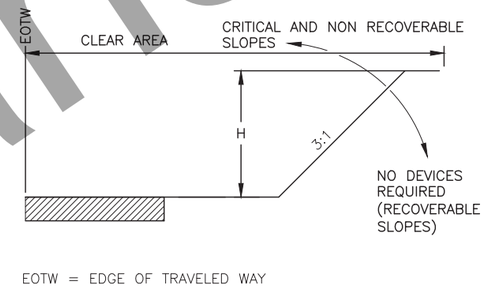
1. PLACE DRUMS OR TYPE II BARRICADES FOR DROP-OFFS ≤ 24" WITHIN THE CLEAR AREA.
2. PROVIDE PORTABLE CONCRETE BARRIER FOR DROP-OFFS >24" WITHIN 15 FEET OF THE EOTW. USE DRUMS OR TYPE II BARRICADES IF BEYOND 15 FEET.

FILL SLOPES

STEEPER THAN OR EQUAL TO 3:1 | BETWEEN 4:1 AND 3:1 | FLATTER THAN OR EQUAL TO 4:1



CUT SLOPES



EOTW = EDGE OF TRAVELED WAY

CLEAR AREA REQUIREMENTS

	LOW SPEED < = 35 MPH	INTERMEDIATE SPEED 40 MPH TO 45 MPH	HIGH SPEED ≥ = 50 MPH
RURAL	15'	24'	30'
URBAN	10' DITCH SECTIONS, OR 2' BEHIND CURB	15' DITCH CONDITIONS, OR 2' BEHIND CURB	15' DITCH CONDITIONS, OR 2' BEHIND CURB

CHANNELIZING DEVICE REQUIREMENTS FOR SLOPES 3:1 OR STEEPER WITHIN THE CLEAR AREA

	H <= 15'	H > 15'
< 2000 VPD LOW VOLUME	CANDLES OR CONES	TYPE II BARRICADES OR DRUMS
> 2000 VPD	TYPE II BARRICADE OR DRUMS	PORTABLE CONCRETE BARRIER OR TEMPORARY GUARDRAIL

TRAFFIC CONTROL NOTES:

1. USE THE EXISTING CROSS-SECTION (PRIOR TO CONSTRUCTION) AS A BASIS FOR DETERMINING WHEN CHANNELIZING DEVICES ARE NEEDED.
2. INSTALL CHANNELIZING DEVICES WHEN THE HORIZONTAL OR VERTICAL CURVATURE IS MADE MORE SEVERE.
3. INSTALL FLEXIBLE DELINEATORS WHEN ALL VEGETATION OVER 4 FEET HIGH IS CLEARED FROM FILL SLOPES THAT ARE 3:1 OR STEEPER IN THE CLEAR AREA.
4. USE PORTABLE CONCRETE BARRIER FOR WARRANTING CONDITIONS WHICH LAST LONGER THAN 3 DAYS. FOR CONDITIONS LASTING LESS THAN 3 DAYS, OTHER CHANNELIZING DEVICES MAY BE INSTALLED.
5. TERMINATE RUNS OF PORTABLE CONCRETE BARRIER USING THE FOLLOWING METHODS:
   - A) CONNECT TO A PORTABLE CRASH CUSHION, OR
   - B) PROVIDE A CONCRETE BARRIER WITH THRIE BEAM TRANSITION TO W-BEAM GUARDRAIL, TREATED WITH A PARALLEL TERMINAL (SEE SECTION 710).
   - C) FLARE THE ENDS OF THE PORTABLE CONCRETE BARRIER AWAY FROM THE ROADWAY AT A RATE OF 7:1 ON A COMPACTED SLOPE OF 6:1 OR FLATTER, OUTSIDE OF THE CLEAR AREA. INSTALL A SLOPING PORTABLE CONCRETE BARRIER END TREATMENT, OR
   - D) BURY IN THE BACKSLOPE.
6. TERMINATE THE RUNS OF TEMPORARY W-BEAM GUARDRAIL USING THE FOLLOWING METHODS:
   - A) PROVIDE A PARALLEL TERMINAL (SEE SECTION 710)
   - B) FLARE THE ENDS OF THE TEMPORARY GUARDRAIL AWAY FROM THE ROADWAY AT A RATE OF 6:1 ON A COMPACTED SLOPE OF 6:1 OR FLATTER OUTSIDE OF THE CLEAR AREA, TERMINATE WITH A STANDARD W-BEAM END SECTION, OR
   - C) BURY IN THE BACKSLOPE.

EQUIPMENT NOTES:

1. WHEN THERE IS ACTIVE, NONMOBILE CONSTRUCTION EQUIPMENT WITHIN THE CLEAR AREA, DELINEATE THE ROADSIDE WITH TRAFFIC CONES.
2. SEPARATE PROCEDURES ARE REQUIRED FOR MOBILE WORK ZONE OPERATIONS AND SHORT DURATION WORK OF LESS THAN 12 HOURS.

WINTER SHUTDOWN NOTES:

1. WHEN REQUIRED, USE CHANNELIZING DEVICES WHICH CAN BE MAINTAINED OVER WINTER.
2. NO CHANNELIZING DEVICES ARE REQUIRED IF:
   - A) CONSTRUCTION SLOPES ARE RECOVERABLE, AND
   - B) SLOPES ARE SMOOTH AND COMPACTED, AND
   - C) REQUIRED CLEAR AREA IS PROVIDED

FILL SLOPES

STATE OF ALASKA 49TH
JUSTIN C. HANNAFIOUS
C.E. 14065
REGISTERED PROFESSIONAL ENGINEER

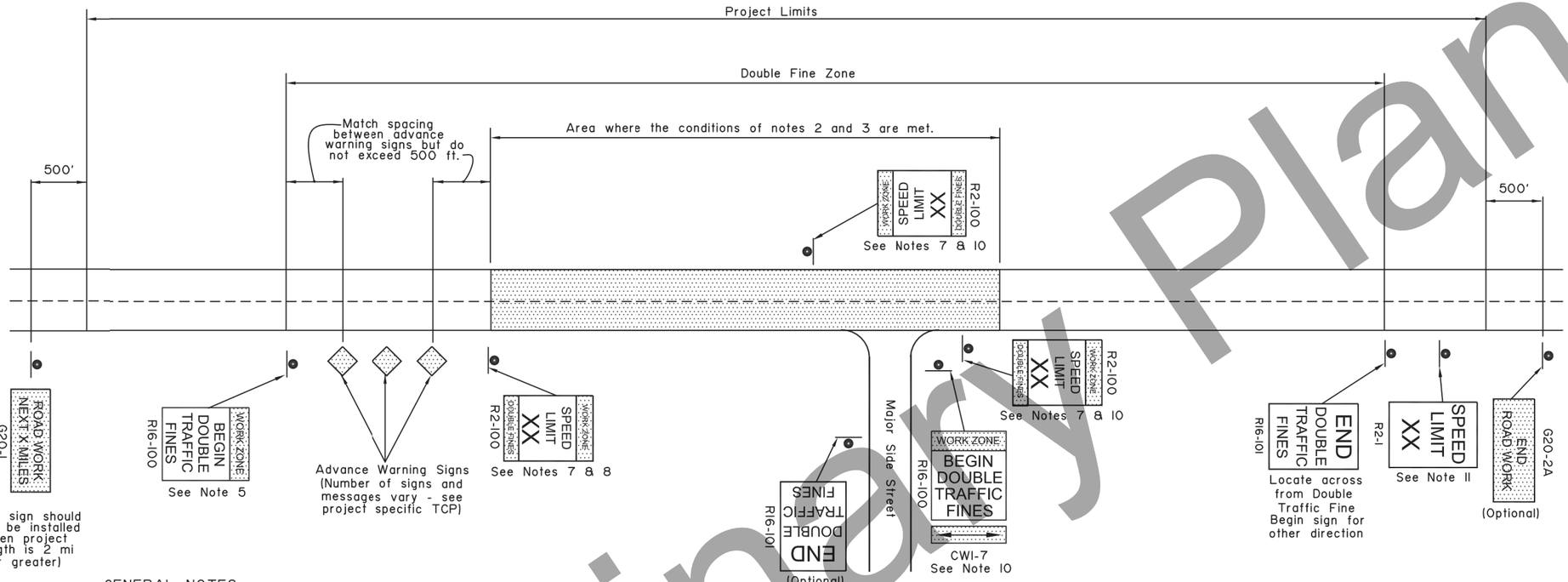
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_T_TRAFFIC-TSM107 Fri, Mar/11/22 09:38am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V1	V20

C-04.12

SHEET 1 of 1



GENERAL NOTES

1. Signs are shown for one direction only (with one exception). Signs for the other direction mirror those shown.
2. Double fine signs shall be used only where one or more of the following conditions exist:
   a. Active work areas (where road workers and/or machines are presently working on or adjacent to a road)
   b. Detours on new temporary roads built for that purpose (this does not include detours on existing streets)
   c. Sections of paved roads where pavement has been removed.
   d. Roads being paved where unmatched asphalt lifts result in a vertical lip between lanes.
3. Double fine signs shall be confined to the areas where the above conditions exist, with the following exceptions:
   a. If the project is 2 miles or shorter in length, the entire project may be posted for double fines when the above conditions exist on any part of the project.
   b. When the above conditions exist at multiple locations separated by less than 2 miles, the locations and the intervening segments may be posted as a single double fine zone.
4. Double fine signs shall be removed or covered when work activity ceases for more than two days and conditions b, c, or d of note 2 are not met.
5. The R16-100 "BEGIN" sign may be used in place of the first advance warning sign. However, when this is done, the appropriate advance warning sign must be reinstalled when the double fine sign is taken down or covered.
6. When a double fine zone is longer than 2 miles, work zone speed limit signs shall be posted at spacings not greater than 2 miles within the double fine zone.
7. "Work zone speed limit signs", as used here, refer either to 1) R2-100 signs or 2) standard R2-1 regulatory speed limit signs with CW20-102 "DOUBLE FINES" plates mounted below.
8. The limit shown on work zone speed limit signs shall be either the existing limit before construction or, if a work zone speed limit order has been approved in accordance with AD0T&PF Procedure 05.05.020 PDR, a reduced limit.
9. All existing regulatory speed limit signs within double fine zones shall either be replaced with R2-100 signs or supplemented with CW20-102 plates.
10. Signs shall be installed at major intersections within the double fine zone to warn entering drivers of double fines. This may be done with a R16-100 sign with a CWI-7 arrow panel on the side street or with two work zone speed limit signs on the main street on either side of the intersection. Use of R16-100 signs on side streets eliminates the need for "Road Work Ahead" signs on those streets. If the speed limit has been reduced, the two work zone speed limit signs are mandatory.
11. At the end of each double fine zone, install an R2-1 sign showing the speed limit for the road beyond the double fine zone.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

LOCATION OF DOUBLE TRAFFIC FINE SIGNS

Adopted as an Alaska Standard Plan by: Kenneth J. Fisher, P.E. Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review By: Date:

Next Code and Standards Review date: 02/08/2029

STANDARD PLAN
C-04.12

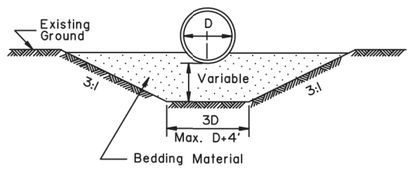
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans-C-04.12 Fri, Mar/11/22 09:38am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V2	V20

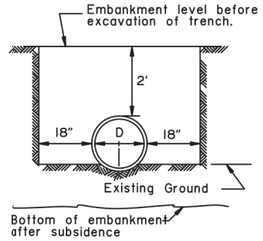
D-01.02

SHEET 1 of 1



TYPE "A"
FOUNDATION STABILIZATION

To be used in unstable areas as directed by the Engineer.



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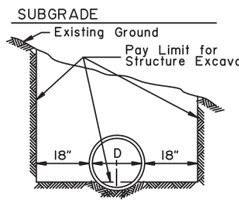

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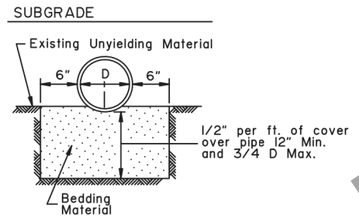
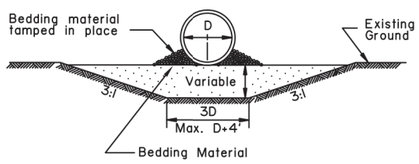


TYPE "D"
ROCK OR UNYIELDING MATERIAL



'ALTERNATE'
TYPE "A"
FOUNDATION STABILIZATION

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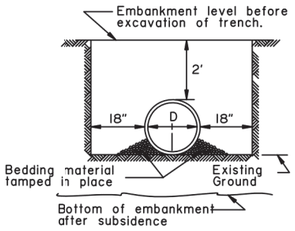
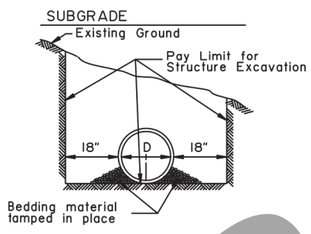


'ALTERNATE'
TYPE "B"



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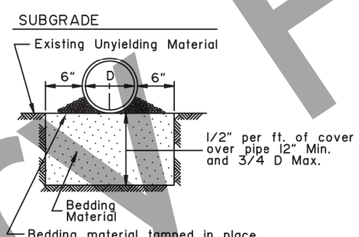
TYPE "C"

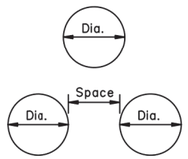


'ALTERNATE' TYPE "D"
ROCK OR UNYIELDING MATERIAL

GENERAL NOTES:

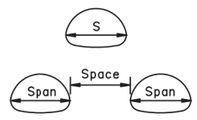
1. Sidefill shall be placed and compacted with care under haunches of pipe and shall be brought up evenly and simultaneously on both sides of pipe to 1 foot above the top of the full length of the pipe.
2. Alternate installation methods may only be used when specified or approved by the Engineer.

D = Nominal Pipe Diameter



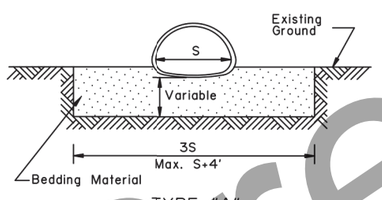
MULTIPLE INSTALLATIONS	
Dia.	Minimum Space Between Pipes
0" - 42"	24"
48" & Over	1/2 Dia. of pipe or 3', whichever is less.

S = Nominal Pipe Arch Span



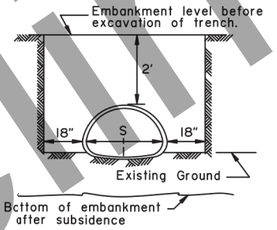
MULTIPLE INSTALLATIONS	
Dia.	Minimum Space Between Pipes
0" - 42"	24"
48" & Over	1/2 Span of pipe arch or 3', whichever is less.

CULVERT PIPE



TYPE "A"
FOUNDATION STABILIZATION

To be used in unstable areas as directed by the Engineer.



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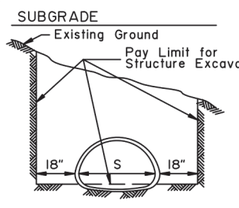
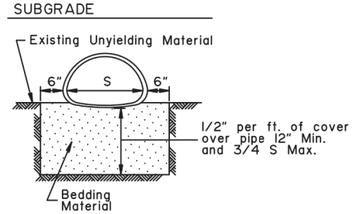


TYPE "C"



TYPE "D"
ROCK OR UNYIELDING MATERIAL

ARCH

State of Alaska DOT&PF
ALASKA STANDARD PLAN

CULVERT PIPE & ARCH INSTALLATION DETAILS

Adopted as an Alaska Standard Plan by: Kenneth J. Fisher, P.E.
Chief Engineer

Acoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

Next Code and Standards Review date: 02/08/2029

STANDARD PLAN
D-01.02

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V3	V20

D-04.22

SHEET 1 of 4

Minimum & Maximum Cover for 2 2/3"X 1/2" Aluminum Pipe

Gage		16	14	12	10	8
Thickness		0.060	0.075	0.105	0.135	0.164
Dia (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
12	12	100+	100+	100+	100+	100+
15	12	100	100+	100+	100+	100+
18	12	83	100+	100+	100+	100+
21	12	71	89	100+	100+	100+
24	12	62	78	100+	100+	100+
27	12		69	97	100+	100+
30	12		62	87	100+	100+
36	12		51	73	94	100+
42	12			62	80	100+
48	12			54	70	85
54	15			48	62	76
60	15				52	64
66	18					52
72	18					43

Minimum & Maximum Cover for 3" x 1" Aluminum Pipe

Gage		16	14	12	10	8
Thickness		0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
30	12	57	72	100+	100+	100+
36	12	47	60	84	100+	100+
42	12	40	51	72	96	100+
48	12	35	44	62	84	99
54	15	31	39	55	74	88
60	15	28	35	50	67	79
66	18	25	32	45	61	72
72	18	23	29	41	56	66
78	21		27	38	51	61
84	21			35	48	56
90	24			33	44	52
96	24			31	41	49
102	24				39	46
108	24				37	43
114	24					39
120	24					36

Minimum & Maximum Cover for 9" X 2 1/2" Aluminum Structural Plate Pipe*

Thickness		0.125	0.150
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)
84	18	31	
90	18	27	
96	18	27	
102	18	24	
108	18	24	
114	18	21	
120	24	21	
126	24	19	
132	30	19	
138	30	18	
144	30	18	
150	30		22
156	30		22
162	36		20
168	36		20

*5.33 - 3/4" dia. steel bolts per foot.

GENERAL NOTES:

1. All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.
2. The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or in the special provisions.
3. No more than one type of pipe may be used on any single installation or installation grouping.
4. All structural plate pipes shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.
5. See Standard Plan D-01 "Culvert Pipe & Arch Installation Details" for foundation and structural backfill details.
6. Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the bottom of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflection.
7. These tables have been developed for an HL-93 live load and for compacted soil weighing 120 lbs. per cubic foot or less. If compacted soil cover exceeds 120 lbs. per cubic foot, the contractor shall use the depth of cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 120 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section 12 of the 2017 AASHTO "LRFD Bridge Design Specifications".

CORRUGATED CIRCULAR ALUMINUM PIPE

CORRUGATED ALUMINUM PIPE-ARCH

Minimum & Maximum Cover for 2 2/3"X 1/2" Aluminum Pipe-Arch

				2 Tons/Sf Corner Bearing Pressure	
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	Max. Cover (Ft)
17	13	3 4/8	16 (0.060)	12	13
21	15	4 1/8	16 (0.060)	12	12
24	18	4 7/8	16 (0.060)	12	12
28	20	5 4/8	14 (0.075)	12	12
35	24	6 7/8	14 (0.075)	12	12
42	29	8 2/8	12 (0.105)	12	12
49	33	9 5/8	12 (0.105)	15	12
57	38	11	10 (0.135)	15	12
64	43	12 3/8	10 (0.135)	18	12
71	47	13 6/8	8 (0.164)	18	12

Minimum & Maximum Cover for 3" x 1" Aluminum Pipe-Arch

				2 Tons/Sf Corner Bearing Pressure	
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	Max. Cover (Ft)
60	46	18 6/8	14 (0.075)	15	20
66	51	20 6/8	14 (0.075)	18	20
73	55	22 7/8	14 (0.075)	21	20
81	59	20 7/8	12 (0.105)	21	16
87	63	22 7/8	12 (0.105)	24	16
95	67	24 3/8	12 (0.105)	24	16
103	71	26 1/8	10 (0.135)	24	16
112	75	27 6/8	8 (0.164)	24	16

Minimum & Maximum Cover for 9" x 2 1/2" Aluminum Multiplate Pipe-Arch*

Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	2 Tons/Sf Corner Bearing Pressure Max. Cover (Ft)
6-7	5-8	31.75	0.125	24	24
6-11	5-9	31.75	0.125	24	24
7-3	5-11	31.75	0.125	24	18
7-9	6-0	31.75	0.125	24	18
8-5	6-3	31.75	0.125	24	16
9-3	6-5	31.75	0.125	24	15
10-3	6-9	31.75	0.125	30	13
10-9	6-10	31.75	0.125	30	13
11-5	7-1	31.75	0.125	30	13
12-7	7-5	31.75	0.125	30	11
12-11	7-6	31.75	0.125	30	11
13-1	8-2	31.75	0.125	30	11
13-11	8-5	31.75	0.125	36	10
14-8	9-8	31.75	0.125	36	9
15-4	10-0	31.75	0.150	36	8
16-1	10-4	31.75	0.150	36	8
16-9	10-8	31.75	0.150	42	7
17-3	11-0	31.75	0.150	42	7
18-0	11-4	31.75	0.175	42	7
18-8	11-8	31.75	0.175	42	7

*5.33 - 3/4" dia. steel bolts per foot.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PIPE AND ARCH TABLES

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLH Date: 7/8/2020

Next Code and Standards Review date: 7/8/2030

STANDARD PLAN
D-04.22 (1 OF 4)

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans-D-04.22 (1 OF 4) Fri, Mar/11/22 09:38am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V4	V20

D-04.22 SHEET 2 of 4

Minimum & Maximum Cover for 2 2/3" x 1/2" Steel Pipe						
Gage		16	14	12	10	8
Thickness		0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
12	12	100+	100+	100+	100+	100+
15	12	100+	100+	100+	100+	100+
18	12	100+	100+	100+	100+	100+
21	12	100+	100+	100+	100+	100+
24	12	100+	100+	100+	100+	100+
30	12	83	100+	100+	100+	100+
36	12	69	86	100+	100+	100+
42	12	59	74	100+	100+	100+
48	12	51	64	91	100+	100+
54	12		57	80	100+	100+
60	12			72	93	100+
66	12			66	85	100+
72	12				78	95
78	12					84
84	12					73

Minimum & Maximum Cover fo 3" x 1" Steel Pipe						
Gage		16	14	12	10	8
Thickness		0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
36	12			100+	100+	100+
42	12			100+	100+	100+
48	12		74	100+	100+	100+
54	12	53	66	93	100+	100+
60	12	47	59	83	100+	100+
66	12	43	54	76	98	100+
72	12	39	49	69	89	100+
78	12	36	45	64	82	100+
84	12	33	42	59	77	94
90	12	31	39	55	71	87
96	12	29	37	52	67	82
102	18	27	34	49	63	77
108	18		32	46	59	73
114	18		31	43	56	69
120	18		29	41	53	65
126	18			39	51	62
132	18			37	48	59
138	18			36	46	57
144	18				44	54

Minimum & Maximum Cover for 5" x 1" Steel Pipe						
Gage		16	14	12	10	8
Thickness		0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
36	12	71	88	100+	100+	100+
42	12	60	76	100+	100+	100+
48	12	53	66	93	100+	100+
54	12	47	59	82	100+	100+
60	12	42	53	74	96	100+
66	12	38	48	67	87	100+
72	12	35	44	62	79	97
78	12	32	40	57	73	90
84	12	30	37	53	68	83
90	12	28	35	49	63	78
96	12	26	33	46	59	73
102	18	24	31	43	56	69
108	18		29	41	53	65
114	18		27	39	50	61
120	18		26	37	47	58
126	18			35	45	55
132	18			33	43	53
138	18			32	41	50
144	18				39	48

Minimum & Maximum Cover for 6" x 2" Steel Multiplate Pipe*								
Gage		12	10	8	7	5	3	1
Thickness		0.111	0.140	0.170	0.188	0.218	0.249	0.280
Dia. (In)	Mn. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
60	12	46	67	87	100	100+	100+	100+
66	12	42	60	79	91	100+	100+	100+
72	12	38	55	73	83	100+	100+	100+
78	12	35	51	67	77	93	100+	100+
84	12	32	47	62	71	86	100+	100+
90	12	30	44	58	67	80	95	100+
96	12	28	41	54	62	75	89	97
102	18	27	39	51	59	71	84	91
108	18	25	37	48	55	67	79	86
114	18	24	35	45	52	63	75	82
120	18	22	33	43	50	60	71	77
126	18	21	31	41	47	57	68	74
132	18	20	30	39	45	54	64	70
138	18	19	28	37	43	52	62	67
144	18	18	27	36	41	50	59	64

*4 - 3/4" dia. steel bolts per foot.

GENERAL NOTES

1. All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.
2. The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or in the special provisions.
3. No more than one type of pipe may be used on any single installation or installation grouping.
4. All structural plate pipes shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.
5. See Standard Plan D-01 "Culvert Pipe & Arch Installation Details" for foundation and structural backfill details.
6. Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the bottom of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflecton.
7. These tables have been developed for an HL-93 live load and for compacted soil weighing 120 lbs. per cubic foot or less. If compacted soil cover exceeds 120 lbs. per cubic foot, the contractor shall use the depth of cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 120 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section 12 of the 2017 AASHTO "LRFD Bridge Design Specifications".

CORRUGATED CIRCULAR STEEL PIPE

CORRUGATED STEEL PIPE-ARCH

Minimum & Maximum Cover for 2 2/3" X 1/2" Steel Pipe-Arch					
		2 Tons/Sf Corner Bearing Pressure			
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	Max. Cover (Ft)
17	13	3 4/8	16 (0.060)	12	11
21	15	4 1/8	16 (0.060)	12	11
24	18	4 7/8	16 (0.060)	12	11
28	20	5 4/8	16 (0.060)	12	11
35	24	6 7/8	16 (0.060)	12	11
42	29	8 2/8	16 (0.060)	12	11
49	33	9 5/8	14 (0.075)	12	11
57	38	11	12 (0.109)	12	11
64	43	12 3/8	12 (0.109)	12	11
71	47	13 6/8	10 (0.138)	12	11
77	52	15 1/8	10 (0.138)	12	11
83	57	16 4/8	8 (0.168)	12	11

Minimum & Maximum Cover for 3"X 1"Steel Pipe-Arch					
		2 Tons/Sf Corner Bearing Pressure			
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	Max. Cover (Ft)
53	41	10 2/8	14 (0.079)	12	10
60	46	18 6/8	14 (0.079)	15	29
66	51	20 6/8	14 (0.079)	15	29
73	55	22 7/8	14 (0.079)	18	18
81	59	20 7/8	14 (0.079)	18	15
87	63	22 7/8	14 (0.079)	18	15
95	67	24 3/8	14 (0.079)	18	15
103	71	26 1/8	14 (0.079)	18	14
112	75	27 6/8	14 (0.079)	21	14
117	79	29 4/8	12 (0.109)	21	14
128	83	31 2/8	10 (0.138)	24	14
137	87	33	10 (0.138)	24	14
142	91	34 6/8	10 (0.138)	24	13
150	96	36	10 (0.138)	30	13
157	96	38	10 (0.138)	30	13
164	105	40	10 (0.138)	30	14
171	110	41	10 (0.138)	30	13

Minimum & Maximum Cover for 5"X 1"Steel Pipe-Arch					
		2 Tons/Sf Corner Bearing Pressure			
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	Max. Cover (Ft)
53	41	10 2/8	14 (0.079)	12	10
60	46	18 6/8	14 (0.079)	15	29
66	51	20 6/8	14 (0.079)	15	29
73	55	22 7/8	14 (0.079)	18	18
81	59	20 7/8	14 (0.079)	18	15
87	63	22 7/8	14 (0.079)	18	15
95	67	24 3/8	14 (0.079)	18	15
103	71	26 1/8	14 (0.079)	18	14
112	75	27 6/8	14 (0.079)	21	14
117	79	29 4/8	12 (0.109)	21	14
128	83	31 2/8	10 (0.133)	24	14
137	87	33	10 (0.133)	24	14
142	91	34 6/8	10 (0.133)	24	13
150	96	36	10 (0.133)	30	13
157	96	38	10 (0.133)	30	13
164	105	40	10 (0.133)	30	14
171	110	41	10 (0.133)	30	13

*4 - 3/4" dia. steel bolts per foot.

Minimum & Maximum Cover for Steel Multiplate Pipe-Arch 6" x 2" *					
		2 Tons/Sf Corner Bearing Pressure			
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Gage (In)	Min. Cover (In)	Max. Cover (Ft)
6-1	4-7	18	12 (0.111)	12	14
7-0	5-1	18	12 (0.111)	12	12
7-11	5-7	18	12 (0.111)	12	10
8-10	6-1	18	12 (0.111)	18	9
9-9	6-7	18	12 (0.111)	18	8
10-11	7-1	18	12 (0.111)	18	6
11-10	7-7	18	12 (0.111)	18	5
12-10	8-4	18	12 (0.111)	24	5
13-3	9-4	31	10 (0.140)	24	11
14-2	9-10	31	10 (0.140)	24	10
15-4	10-4	31	10 (0.140)	24	9
16-3	10-10	31	10 (0.140)	30	8
17-2	11-4	31	10 (0.140)	30	8
18-1	11-10	31	10 (0.140)	30	7
19-3	12-4	31	10 (0.140)	30	7
19-11	12-10	31	10 (0.140)	30	6
20-7	13-2	31	10 (0.140)	36	6

*4 - 3/4" dia. steel bolts per foot.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PIPE AND ARCH TABLES

Adopted as an Alaska Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLH Date: 7/8/2020

Next Code and Standards Review date: 7/8/2030

STANDARD PLAN
D-04.22 (2 OF 4)

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V5	V20

D-04.22 SHEET 3 of 4

Maximum Cover for Type S Corrugated Polyethelene Pipe	
Size (in)	Max. Cover (ft)
12	24
15	25
18	24
24	20
30	20
36	18
42	16
48	17

GENERAL NOTES

1. All materials and workmanship shall be in accordance with the State of Alaska Standard Specifications for Highway Construction.
2. For foundation and structural backfill details see Standard Plan D-01 "Culvert Pipe & Arch Installation Details".
3. Pipe cover height is measured from top of the pipe to top of rigid pavement, or to the bottom of subgrade for flexible pavement. In all cases the minimum cover shall be no less than 2 ft. Where loads traverse the culvert during construction minimum cover shall be no less than 4 ft.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PIPE AND ARCH TABLES

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLH Date: 7/8/2020

Next Code and Standards Review date: 7/8/2030

STANDARD PLAN
D-04.22 (3 OF 4)

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans-D-04.22 (3 OF 4) Fri, Mar/11/22 09:38am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V6	V20

D-04.22 SHEET 4 of 4

GENERAL NOTES

1. All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.
2. The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or in the special provisions.
3. No more than one type of pipe may be used on any single installation or installation grouping.
4. All structural plate pipes shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.
5. See Standard Plan D-01 "Culvert Pipe & Arch Installation Details" for foundation and structural backfill details.
6. Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the bottom of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflecton.
7. These tables have been developed for an HL-93 live load and for compacted soil weighing 120 lbs. per cubic foot or less. If compacted soil cover exceeds 120 lbs. per cubic foot, the contractor shall use the depth of cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 120 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section 12 of the 2017 AASHTO "LRFD Bridge Design Specifications".

ALUMINUM SPIRAL RIB PIPE

Minimum & Maximum Cover for Aluminum Spiral Rib Circular Pipe*

Gage		16	14	12	10
Thickness		0.064	0.079	0.109	0.138
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
18	12	43	61		
21	12	38	52	84	
24	12	33	45	73	
30	15	26	36	58	
36	18	21	30	49	69
42	21		25	41	59
48	24			36	51
54	24			32	46
60	24			29	41
66	24				37
72	30				34

*¾ x ¾ x 7½ in. Corrugations

Minimum & Maximum Cover for Aluminum Spiral Rib Pipe-Arch*

Gage			16	14	12	10
Thickness			0.060	0.075	0.105	0.135
Span (Ft.-In.)	Rise (Ft.-In.)	Min. Cover (In)	Max. Cover (Ft)			
20	16	12	16			
23	19	12	15			
27	21	15	13	13		
33	26	18	13	13	13	
40	31	21		13	13	
46	36	24			13	13
53	41	24			13	13
60	46	24			13	13
66	51	24				13

*¾ x ¾ x 7½ in. Corrugations

STEEL SPIRAL RIB PIPE

Minimum & Maximum Cover for Steel and Aluminized Steel Spiral Rib Circular Pipe*

Gage		16	14	12	10
Thickness		0.064	0.079	0.109	0.138
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
18	12	91			
24	12	68	95	100+	
30	12	54	76	100+	
36	12	45	63	100+	
42	12	38	54	90	
48	12	33	47	79	
54	18	30	42	70	
60	18	27	38	63	92
66	18	24	34	57	83
72	18		31	52	76
78	24		29	48	70
84	24		27	45	65
90	24			42	61
96	24			39	56
102	30			36	50
108	30			32	45

*¾ x ¾ x 7½ in. Corrugations.

Minimum & Maximum Cover for Steel Spiral Rib Pipe-Arch*

			2 Tons/Sf Corner Bearing Pressure		
Thickness			0.064	0.079	0.109
Span (Ft.-In.)	Rise (Ft.-In.)	Min. Cover (In)	Max. Cover (Ft)		
20	16	12	13		
23	19	12	13		
27	21	12	11		
33	26	12	11		
40	31	12	11		
46	36	12	11		
53	41	18		11	
60	46	18		19	
66	51	18		19	
73	55	18			18
81	59	18			15
87	63	18			15
95	67	18			15

*¾ x ¾ x 7½ in. Corrugations

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PIPE AND ARCH TABLES

Adopted as an Alaska Standard Plan by: Carolyn Morehouse

Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLH Date: 7/8/2020

Next Code and Standards Review date: 7/8/2030

STANDARD PLAN
D-04.22 (4 OF 4)

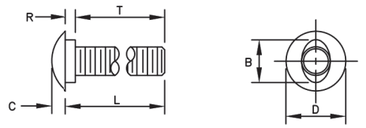
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans-D-04.22 (4 OF 4) Fri, Mar/11/22 09:38am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V7	V20

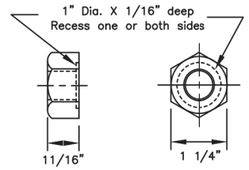
G-00.05

SHEET 1 of 5

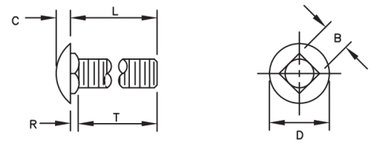


B	C	D	L (Length)	R	T (Thread Length)
15/16"	5/16"	1 5/16" or 1 7/16"	As Required	7/32"	As Required

5/8" BUTTONHEAD BOLT
(FBB01–05)

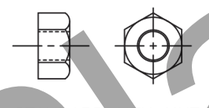


5/8" Dia. RECESSED HEX NUT
(FBB01–05)

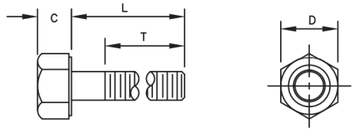


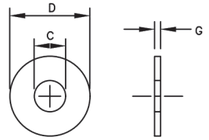
B	C	D	L (Length)	R	T (Thread Length)
5/8"	5/16"	1 5/16"	As Required	3/16"	As Required

5/8" Dia. CARRIAGE BOLT
(FBC10–20)



STANDARD HEX NUT



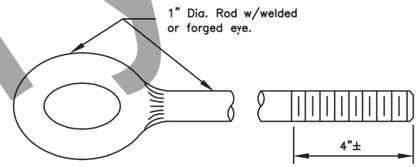


Bolt Size	C	D	L (Length)	T (Thread Length)
5/16"	——	——	1 1/2"	7/8"
5/16"	——	——	1"	1"
3/8"	——	——	7 1/2"	1 1/2"
1/2"	——	——	1 1/2"	1 1/2"
1/2"	——	——	1 1/4"	1 1/4"
5/8" H.S.	5/16"	7/8"	8"	1 1/2"
5/8"–11	——	——	1 1/2"	1 1/2"
3/4"	——	——	1 1/2"	1 1/2"
3/4"	——	——	As Required	2"
3/4" H.S.	15/32"	1 1/4"	2"	1 1/2"

STANDARD HEX BOLTS

For Bolt ø	C	D	G
3/8"	7/16"	1"	5/64"
1/2"	17/32"	1 1/16"	3/32"
1/2" H.S.	17/32"	1 1/16"	3/32"
5/8"	11/16"	1 3/4"	9/64"
3/4"	13/16"	1 15/32"	9/64"
3/4" H.S.	13/16"	2"	5/32"
1"	1 1/16"	2"	9/64"

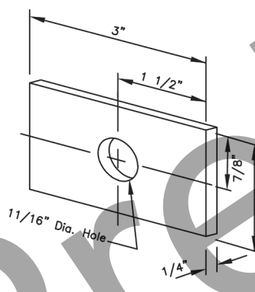
STANDARD STEEL WASHERS



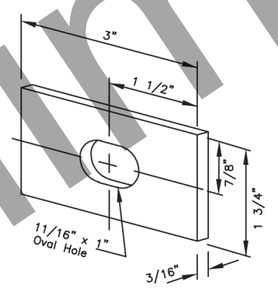
EYE BOLT

GENERAL NOTES:

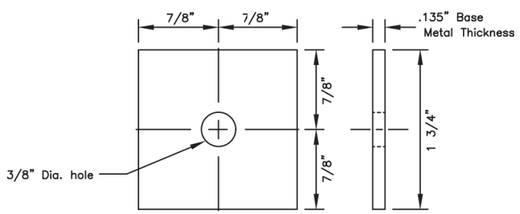
1. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Scfety Hardware online publication. Designators given when possible in parentheses.



FLAT PLATE WASHER



RECTANGULAR POST BOLT WASHER
(FWR03)



SQUARE STEEL WASHER
(FWR01)

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STANDARD GUARDRAIL HARDWARE (NUTS, BOLTS & WASHERS)

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

STANDARD PLAN
G–00.05 (1 OF 5)

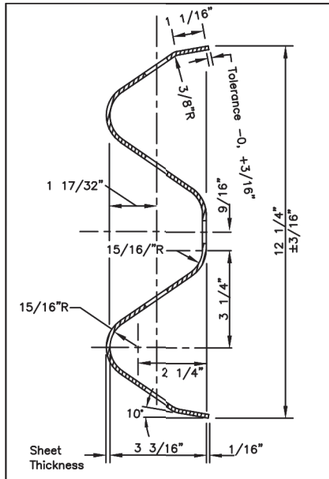
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644–2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans–G–00.05 (1 OF 5) Fri, Mar/11/22 09:38am

NO.	DATE	REVISION

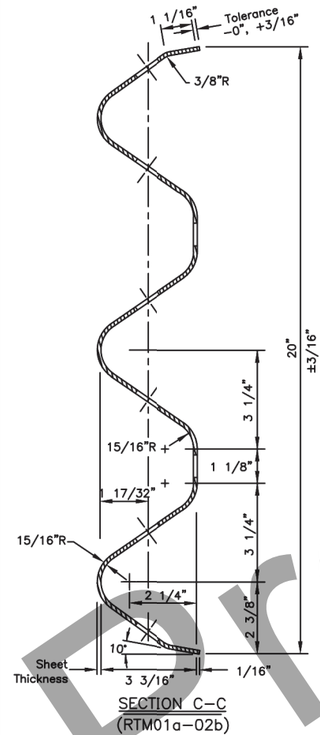
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V8	V20

G-00.05

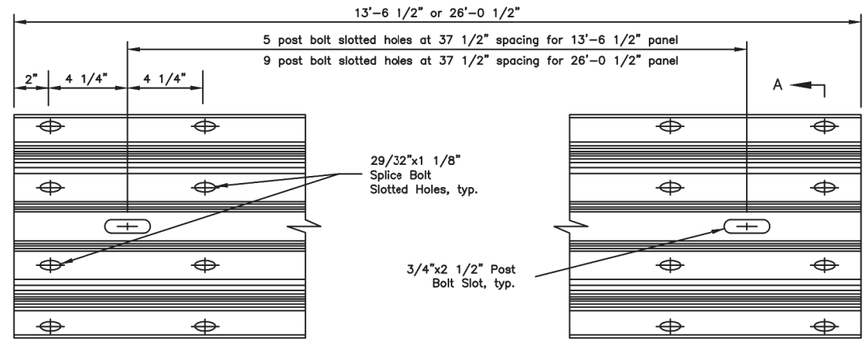
SHEET 2 of 5



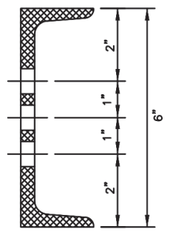
SECTION A–A
(cross section same as RWM02a–b)



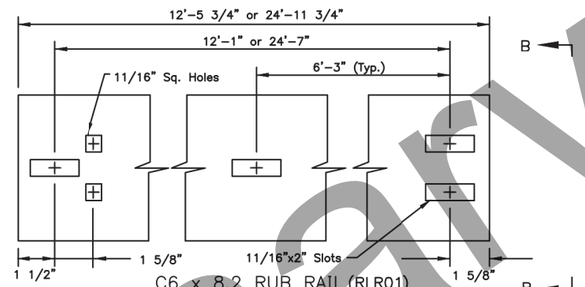
SECTION C–C
(RTM01a–02b)



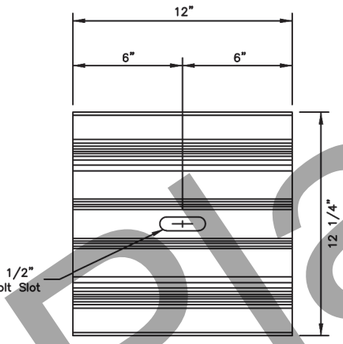
STANDARD W–BEAM PANEL (RWM04a–b)



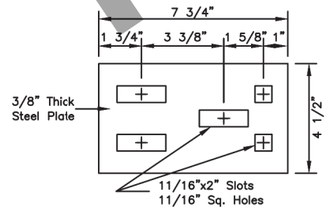
SECTION B–B



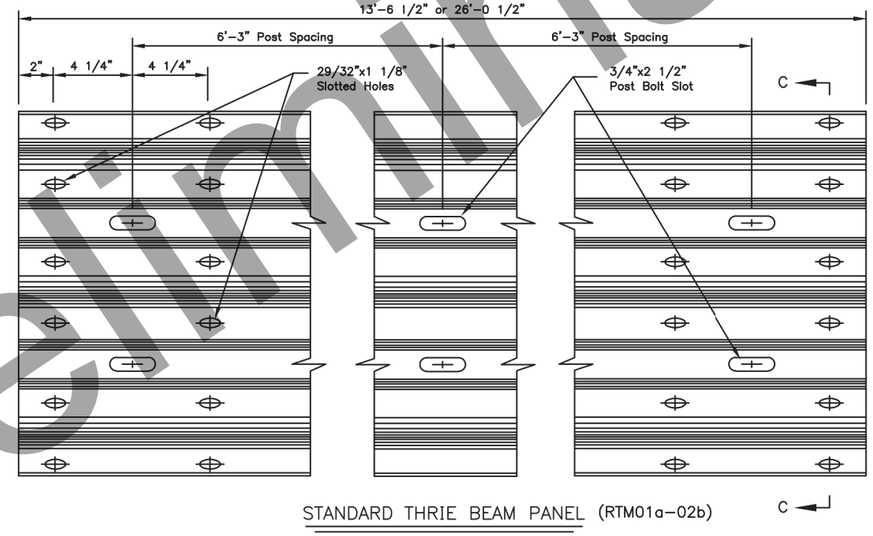
C6 x 8.2 RUB RAIL (RLR01)
ASTM A36 STEEL



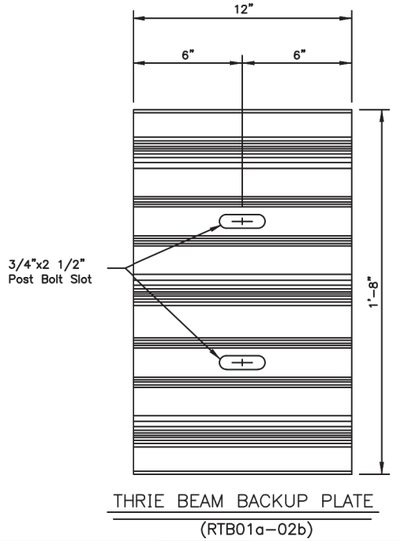
W–BEAM BACKUP PLATE
(RWB01a–b)



SPLICE PLATE (RLR01)
ASTM A36 STEEL



STANDARD THRIE BEAM PANEL (RTM01a–02b)



THRIE BEAM BACKUP PLATE
(RTB01a–02b)

GENERAL NOTES:

1. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.
2. Install back–up plates between blockouts and w–beam or thrie–beam rail at intermediate (non–splice) posts when steel blockouts are used but not with wood, rubber, plastic, or other approved blockouts.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STANDARD GUARDRAIL HARDWARE (RAILS AND SPLICES)

Acopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Acoption Date: 7/17/2020

Last Code and Stds. Review By: KLK Date: 7/8/2020

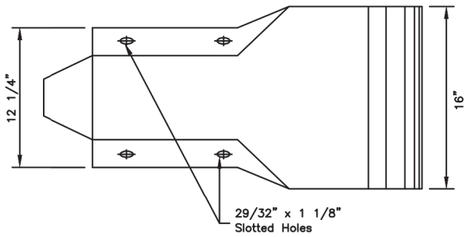
Next Code and Standards Review Date: 7/8/2030

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644–2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans–G–00.05 (2 OF 5) Fri, Mar/11/22 09:38am

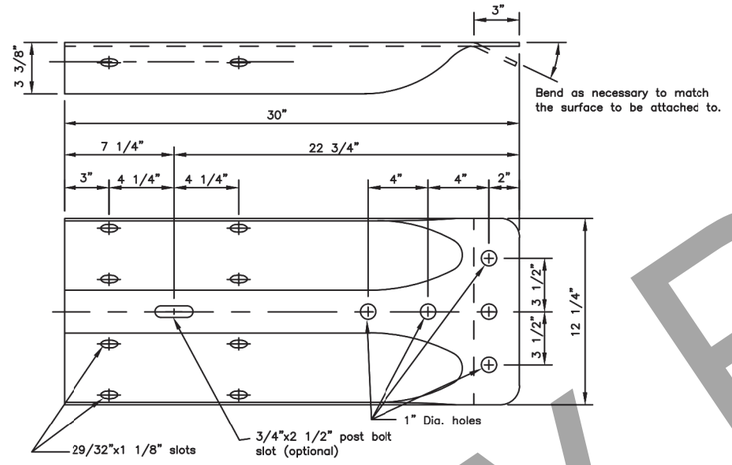
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V9	V20

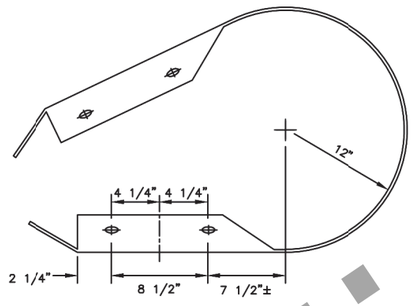
G-00.05 SHEET 3 of 5



PROFILE

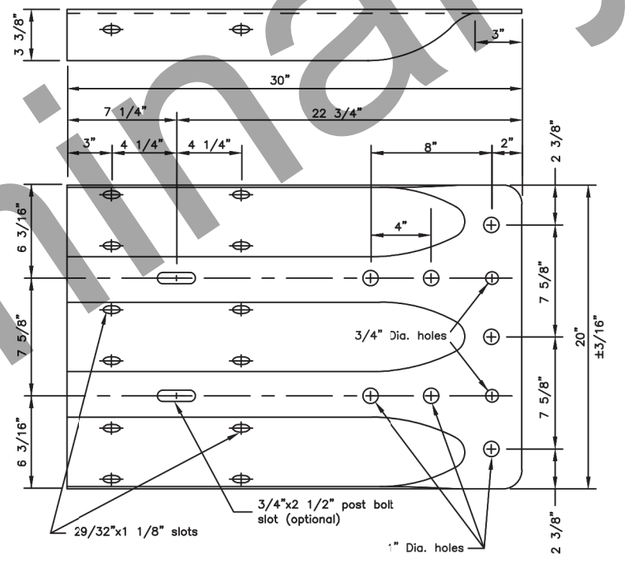


STANDARD W-BEAM TERMINAL CONNECTOR
(RWE02)



W-BEAM PLAN VIEW
*Radius to be specified on the plans

STANDARD W-BEAM END SECTION
(RWE06)



STANDARD THRIE BEAM TERMINAL CONNECTOR
(RTE01b)

GENERAL NOTES:

1. W-Beam and Thrie Beam Terminal Connectors shall conform to AASHTO M 180, Class B, Type II.
2. W-Beam end sections shall conform to AASHTO M 180, Class A, Type II.
3. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STANDARD GUARDRAIL HARDWARE (TERMINAL CONNECTORS)

Acopted as an Alaska Standard Plan by: Carolyn Morehouse

Carolyn Morehouse, P.E.
Chief Engineer

Acoption Date: 7/17/2020

Lcst Code and Stds. Review
By:KLK Date: 7/8/2020

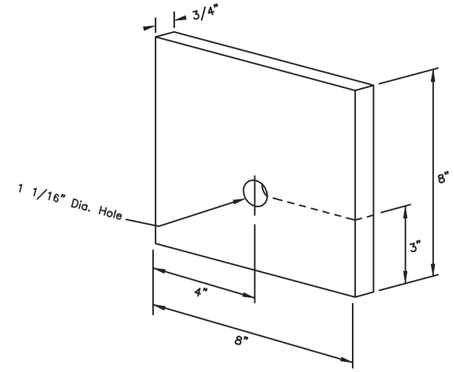
Next Code and Standards Review Date: 7/8/2030

STANDARD PLAN
G-00.05 (3 OF 5)

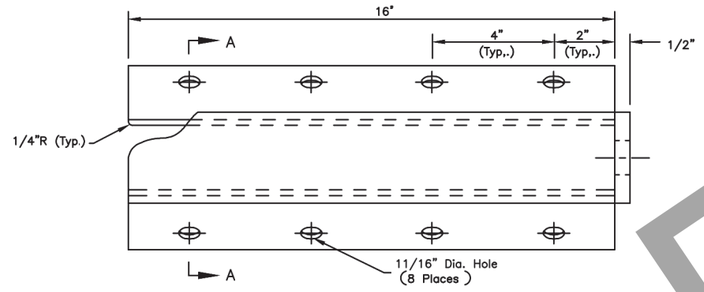
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V10	V20

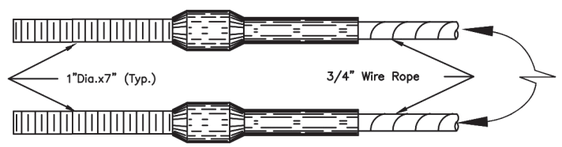
G-00.05 SHEET 4 of 5



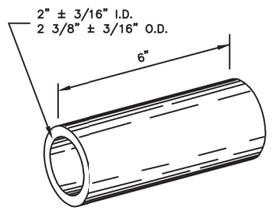
BEARING PLATE for CRT TERMINAL ANCHOR
(FPB01)



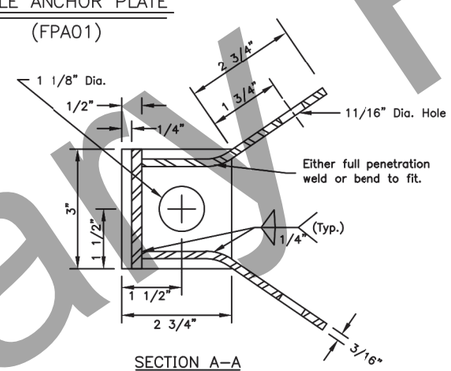
CABLE ANCHOR PLATE
(FPA01)



SWAGED FITTING DETAIL
(FCA01–02)



SLEEVE DETAIL
(FMM02)

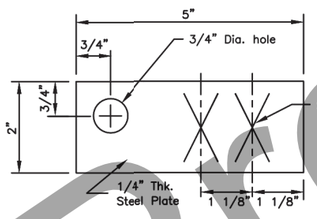


SECTION A–A

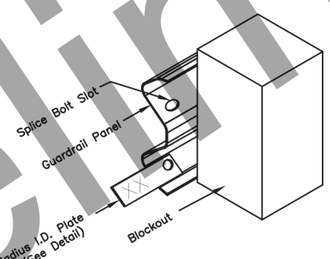
CONTROLLED RELEASE TERMINAL HARDWARE DETAILS

GENERAL NOTES:

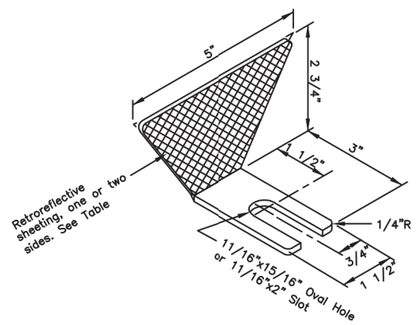
1. Cable Anchor Plate may be formed in single unit or welded fabrication.
2. Anchor Cable Assembly must conform to AASHTO M 30 with Type II Wire Rope.
3. Provide Sleeve for Wood Posts meeting the requirements of ASTM A53 and made of 2–inch galvanized standard pipe. Sleeve shall be a tight, pressed fit in post.
4. Attach radius ID plates to all shop–bent guardrail sections. Bolt the ID plates to the back side of the guardrail panel with the lower splice bolt nearest the P.C. of the radius.
5. Show the Rail bend radius, in feet, as "XX" on the radius ID plate. Digits shall be etched or stamped and have a min. height of 1 1/2" and a max. width of 3/4". Galvanize the plate after the digits are marked.
6. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.



RADIUS I.D. PLATE



RADIUS I.D. PLATE MOUNTING DETAIL



GUARDRAIL REFLECTOR

Guardrail Reflector Table

Type	Color	Reflectorized
A	White	Front & Rear
B	White	Front
C	Yellow	Front
D	Yellow	Front & Rear

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STANDARD GUARDRAIL HARDWARE (MISCELLANEOUS)

Adopted as an Alaska Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLK Date: 7/8/2020

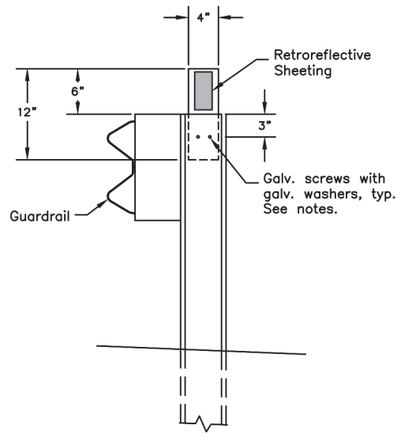
Next Code and Standards Review Date: 7/8/2030

STANDARD PLAN
G–00.05 (4 OF 5)

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V11	V20

G-00.05 SHEET 5 of 5



GUARDRAIL FLEXIBLE DELINEATOR DETAIL

(Steel post shown – similar for wood post)

CONSTRUCTION NOTES

1. Install guardrail flexible delineators where shown on the plans.
2. Install guardrail flexible delineators at 50 foot spacing, unless otherwise noted on the plans. Install not less than 2 delineators per guardrail run.
3. Use 3" x 5" white/yellow/red retroreflective sheeting as required per Standard Plan T–05. Install retroreflective sheeting on both sides of delineator on two–way roads.
4. Attach 4" x 12" flexible delineators to the top of new guardrail posts, on the trailing side of the posts relative to the adjacent lane's direction of travel.
5. Use 2 each 1/4" dia. x 1–1/2" long galvanized lag screws for attaching to wood posts and 2 each 1/4" dia. x 3/4" long galvanized self–drilling fasteners for steel posts. Install a galvanized washer between the fastener head and the flexible delineator.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STANDARD GUARDRAIL HARDWARE (FLEXIBLE DELINEATORS)

Acopted as an Alaska Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

Acoption Date: 7/17/2020

Lcst Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

STANDARD PLAN
G–00.05 (5 OF 5)

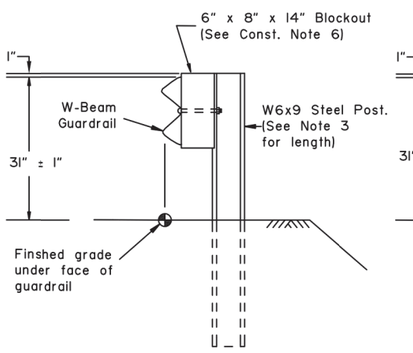
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644–2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans–G–00.05 (5 OF 5) Fri, Mar/11/22 09:38am

NO.	DATE	REVISION

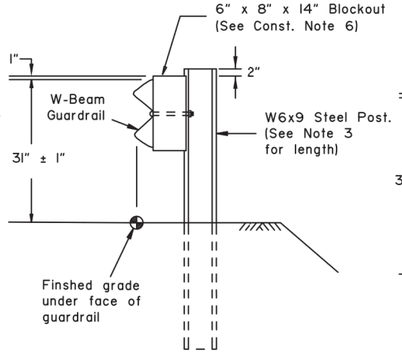
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V12	V20

G-05.11S

SHEET | of |

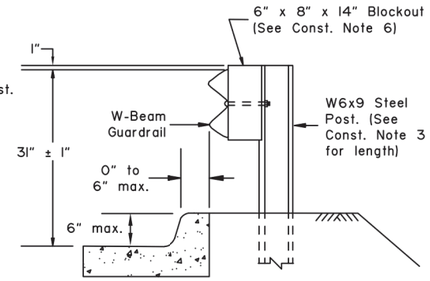


TYPE I POST INSTALLATION

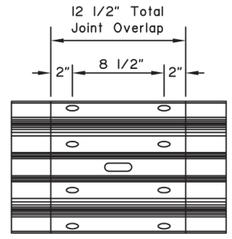


TYPE II POST INSTALLATION

(Facilitates raising rail for future overlays.)

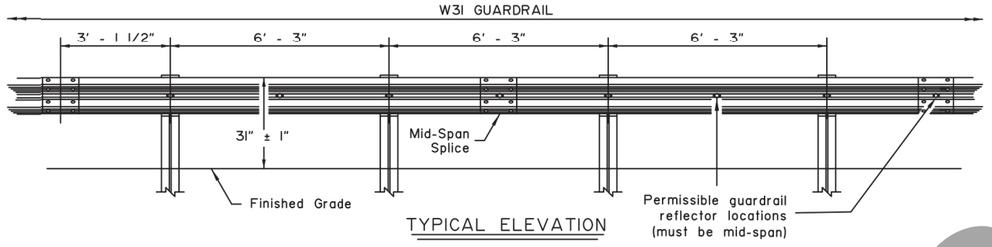


TYPE III POST INSTALLATION

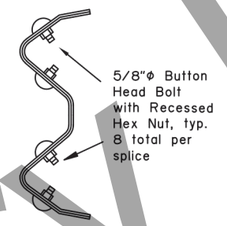


SPLICE DETAIL

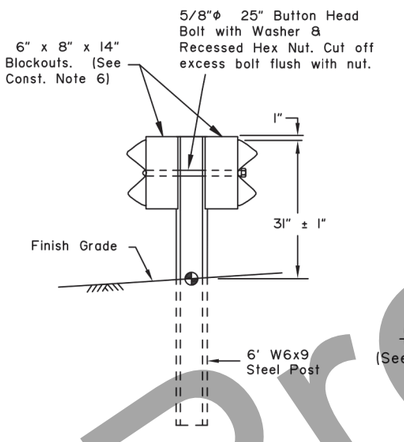
(At mid span between posts only. Bolts not shown for clarity)



TYPICAL ELEVATION



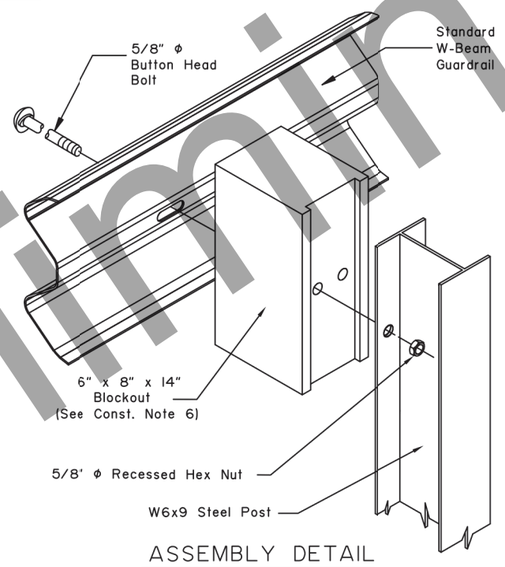
SPLICE CROSS-SECTION



TYPE IV DOUBLE SIDED INSTALLATION

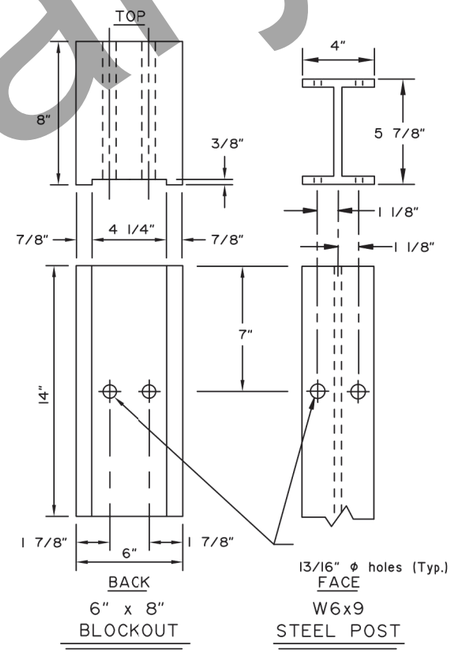
GUARDRAIL REFLECTOR

(See Const. Note 5)



ASSEMBLY DETAIL

(Type I post shown)



CONSTRUCTION NOTES:

1. Provide hardware compliant with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware.
2. See Standard Plan G-00 for hardware details not shown on this drawing.
3. See Standard Plan G-10 for post lengths corresponding to different combinations of slope and behind-post embankment width.
4. Typical post spacing is 6'-3" center to center.
5. Attach guardrail reflector to guardrail using a 5/8" button head bolt with 5/8" recessed head hex nut and steel washer at location shown in the Typical Elevation. Install reflectors every 25' on tangents and every 12.5' on curves starting 100' before the P.C. and ending 100' after the P.T.
6. Use wood or synthetic blockouts designed, tested, and passed per MASH for use with steel posts. Either bolt hole on the blockout may be used for attachment.
7. Use a 25 linear foot transition to match differing height of existing or new rail elements and end treatments - see Standard Plan G-11.
8. W6x8.5 steel post may be substituted for W6x9 steel post.
9. Install flexible delineators on guardrail posts when called for in the contract. See Standard Plan G-00 for guardrail flexible delineator details.

DESIGN NOTES:

1. No fixed objects allowed within 36" of the back side of guardrail post.
2. This barrier is acceptable under MASH Tests 3-10 and 3-11.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STEEL POST W31 GUARDRAIL

Adopted as an Alaska Standard Plan by: Carolyn Morehouse

Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 05/15/2019

Last Code and Stds. Review By: LRG Date: 5/15/2019

Next Code and Standards Review date: 5/15/2029

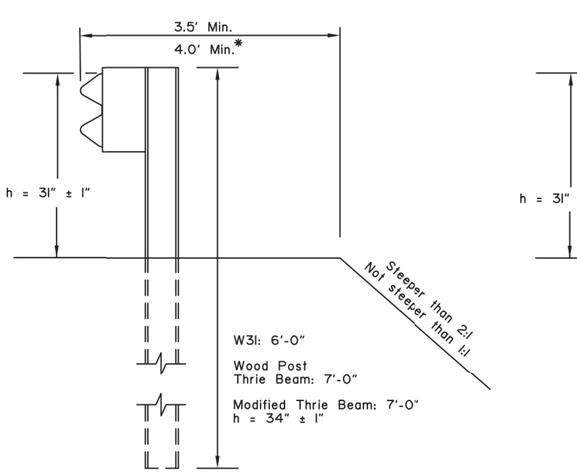
STANDARD PLAN
G-05.11S

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V13	V20

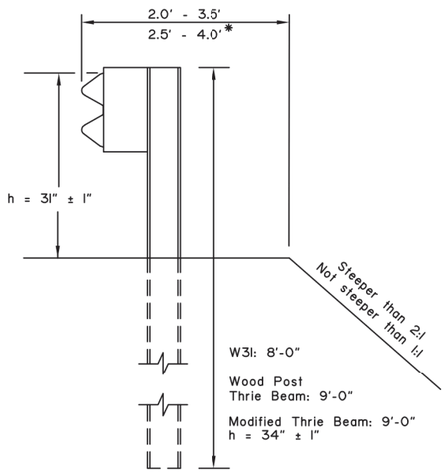
G-10.20

SHEET 1 of 1



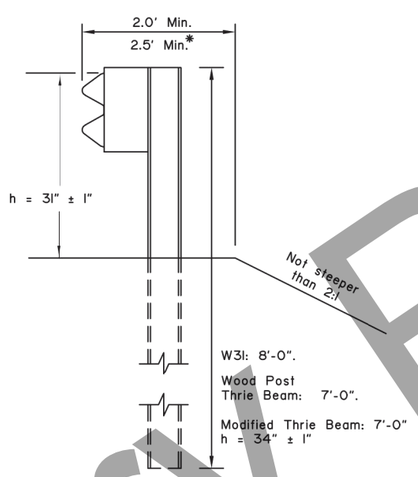
* with Modified Thrie Beam

CASE 1

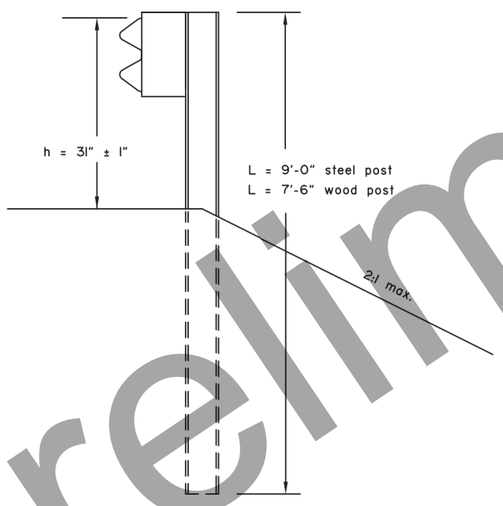


* with Modified Thrie Beam

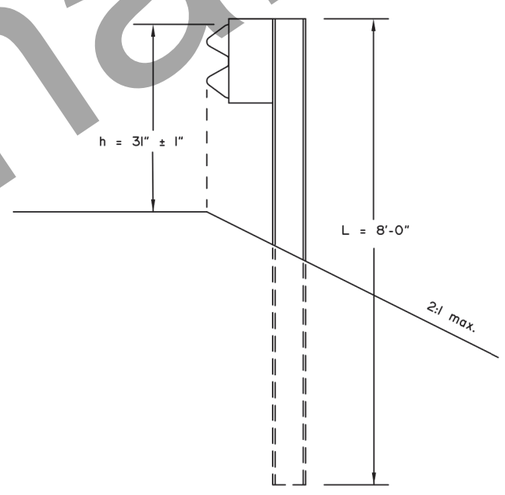
CASE 2



CASE 3



CASE 4
(See Note 5)



CASE 5
(See Note 5)

CONSTRUCTION NOTES:

1. This drawings is to be used for post length determination only. See Plans for slopes and behind-post embankment widths.
2. To determine post length, identify the case that matches site conditions and read the length corresponding to the pertinent guardrail type.
3. These dimensions apply to both curbed and uncurbed section.
4. Case 1, 2 and 3 are shown with steel posts. Wood posts may be substituted when allowed by specifications. Wood Post Thrie Beam installations must use wood posts only.
5. Case 4 and 5 apply to W31 guardrail only.

DESIGN NOTES:

1. No fixed objects allowed within 36" of the back of post for Cases 1, 2 & 3.
2. No fixed objects allowed within 48" of the back of post for Cases 4 & 5.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

GUARDRAIL POST INSTALLATION

Adopted as an Alaska Standard Plan by: Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

Next Code and Standards Review date: 02/08/2029

STANDARD PLAN
G-10.20

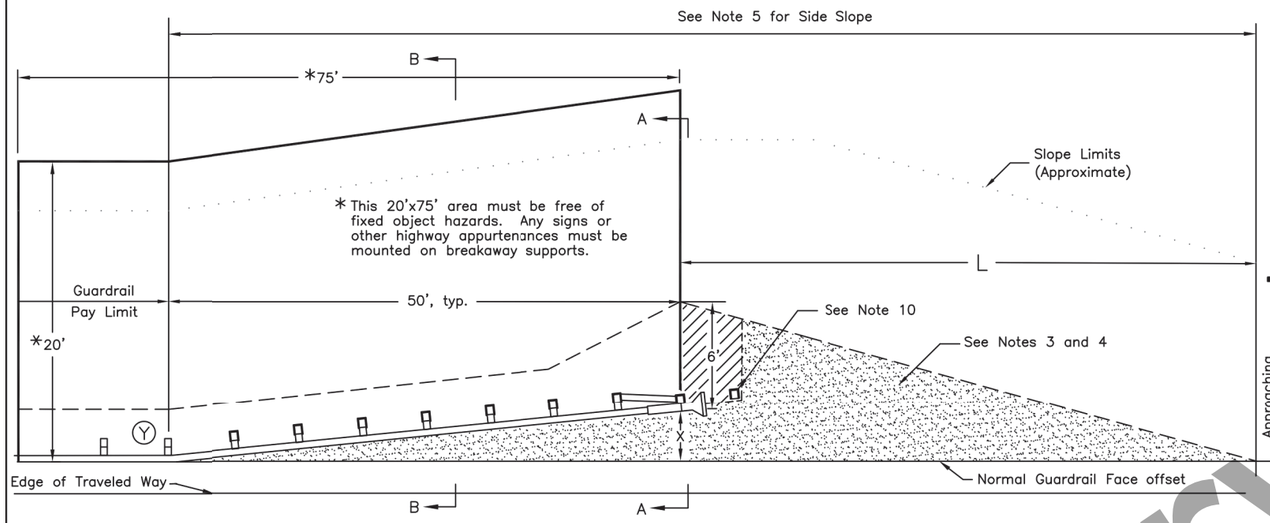
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans-G-10.20 Fri, Mar/11/22 09:38am

NO.	DATE	REVISION

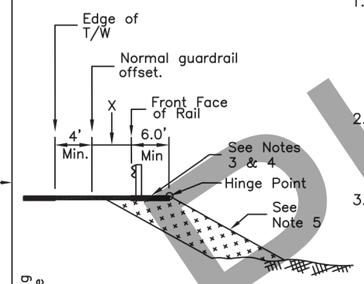
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V14	V20

G-20.12

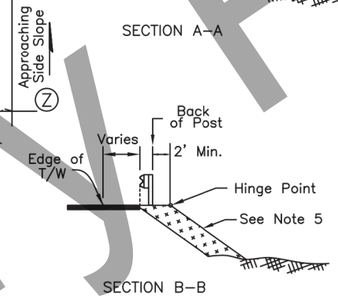
SHEET 1 of 1



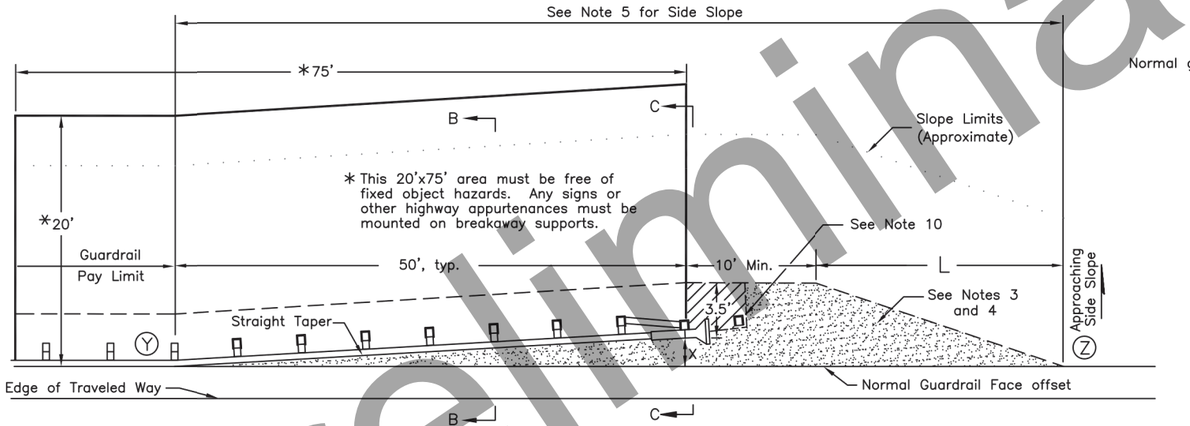
STANDARD GUARDRAIL TERMINAL WIDENING DETAIL



SECTION A–A

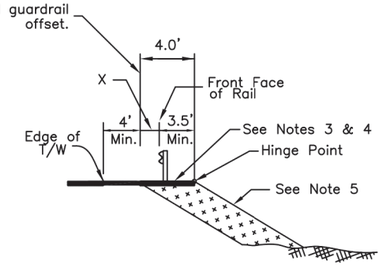


SECTION B–B
(Applies to both details)



ALTERNATE GUARDRAIL TERMINAL WIDENING DETAIL

(USE ONLY WHEN LIMITED RIGHT–OF–WAY OR LIMITING SITE CONDITIONS MAKE THE STANDARD DETAIL INFEASIBLE)



SECTION C–C

X= End offset. See manufacturer's information for the range of acceptable end offsets for each MASH compliant terminal.

Taper Lengths (L) for Common End Offsets (X)

End Offset	Standard Detail	Alternate Detail
0'	24.0'	13.0'
1'	26.0'	17.0'
1.5'	28.0'	19.0'
2'	30.0'	21.0'
2.5'	32.0'	22.0'
4'	37.0'	28.0'
Interpolate if the end offset falls between table values		

GENERAL NOTES

1. This Std. Dwg. applies to all MASH approved guardrail end terminals (GETs). The alternate detail may only be used with parallel or tangent GETs. The terminal details shown are for illustration only – see manufacturer's drawings for actual post, rail, strut, etc. configuration and layout.
2. Use this Std. Widening Detail for all GETs except when limited right–of–way or limiting site conditions make the use of the Std. Widening Detail infeasible. In that case, the alternate detail is permissable.
3. Construct the shaded areas to match the slope of the adjacent shoulder. The slope may be increased to 10:1 if identified in the plans or when approved by the engineer. Match the slope when the shoulder slopes toward the road as well as away from the road.
4. On paved roads, the shaded areas shall be paved. On gravel roads, surface the shaded areas with the same materials used to surface the travel lanes.
5. From point Ⓨ to point Ⓩ make the side slope match the approaching side slope except where it is flatter than 4:1. In that case, the slope may be steepened to 4:1.
6. Attach a flexible marker at the beginning of each GET.
7. The max. allowable height for foundation tubes or other steel components of terminal post breakaway systems is 4" above the surrounding grade.
8. The details on this sheet do not apply to W31 Downstream End Anchors (Std Dwg G–14).
9. The details on this sheet apply to GETs on both the approach and downstream ends on two–way undivided roads and to any downstream MASH compliant GETs.
10. Some MASH GET systems have an additional post/anchor at the approximate location shown. If this post/anchor is present do not pave the diagonally hatched area. If not present, pave the diagonally hatched area also.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

WIDENING FOR GUARDRAIL END TERMINALS

Adopted as an Alaska Standard Plan by: Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review By: Date:

Next Code and Standards Review date:02/08/2029

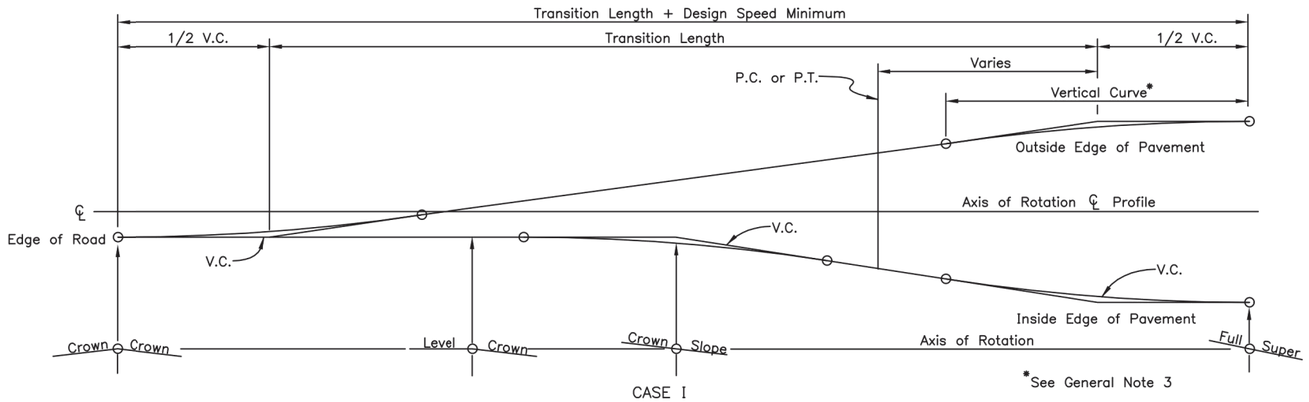
STANDARD PLAN
G–20.12

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644–2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans–G–20.12 Fri, Mar/11/22 09:38am

NO.	DATE	REVISION

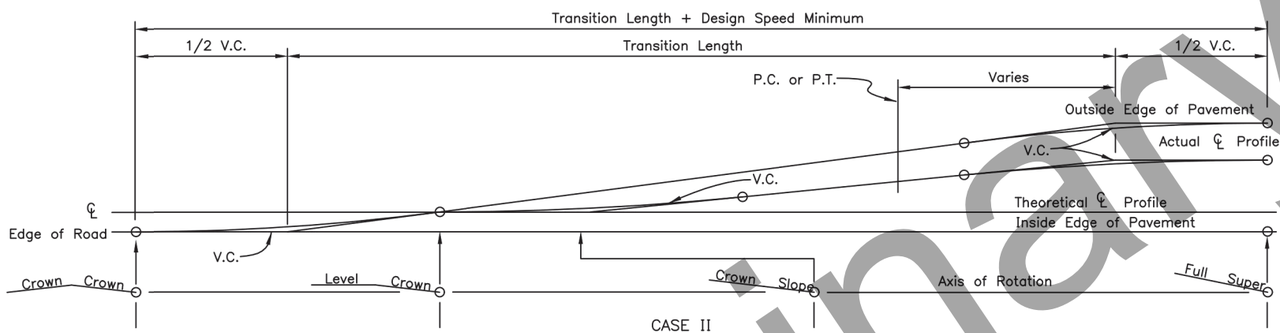
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V15	V20

I-81.00 SHEET 1 of 1

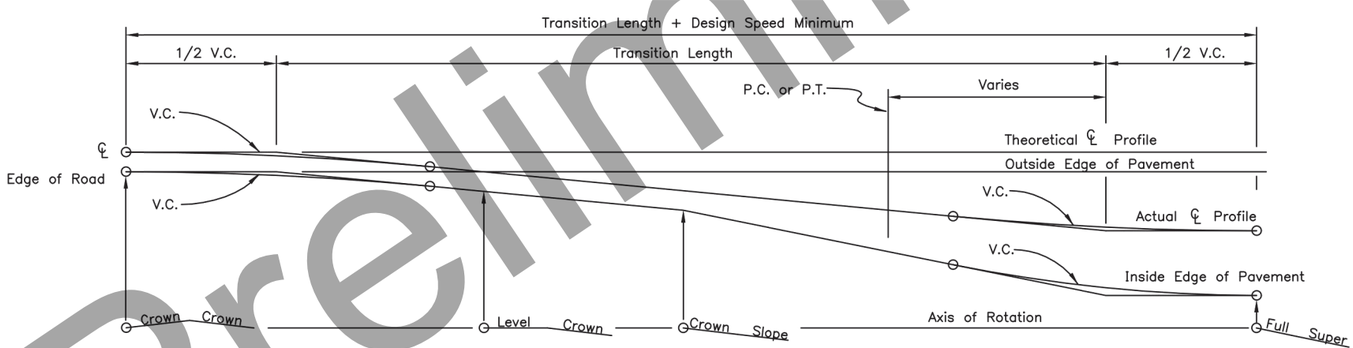


*See General Note 3

CASE I
PAVEMENT REVOLVED ABOUT CENTERLINE



CASE II
PAVEMENT REVOLVED ABOUT INSIDE EDGE
TO BE USED WHERE DRAINAGE IS THE GOVERNING CONSIDERATION



CASE III
PAVEMENT REVOLVED ABOUT OUTSIDE EDGE TO BE
USED WHERE OVERALL APPEARANCE IS THE MAIN CONTROL

GENERAL NOTES:

1. Location of transition length relative to horizontal curves will be shown on the plans or as directed by the Engineer.
2. Widening for guardrail or curvature will not change the location of the axis of rotation.
3. Minimum vertical curve length in feet shall be the numerical value of the design speed in M.P.H.
4. Superelevation shall be built into the subgrade and carried through the shoulders.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

SUPERELEVATION
TRANSITION

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

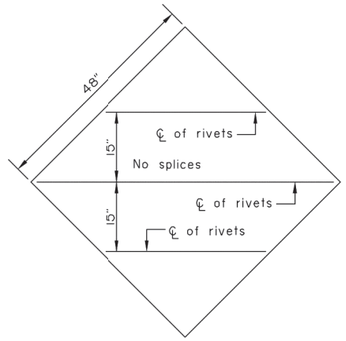
STANDARD PLAN
I-81.00

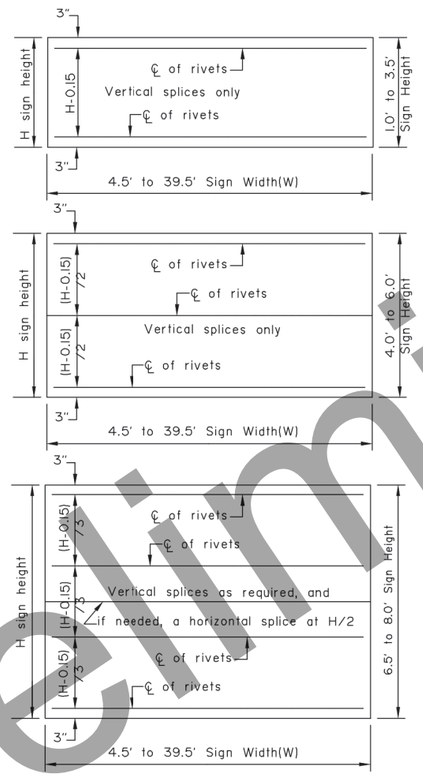
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans-I-81.00 Fri, Mar/11/22 09:38am

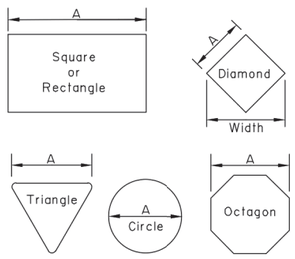
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V16	V20

S-00.12 SHEET 1 of 1





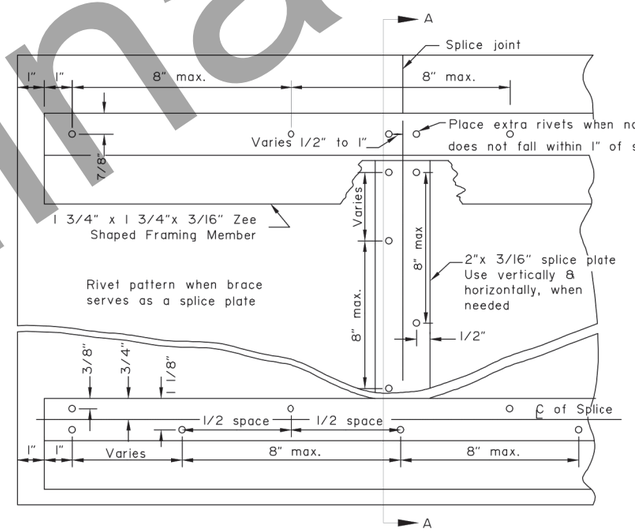


Maximum size unframed signs using 0.125" thick aluminum sheeting.	
Sign Shape	A
Squares, Shields, and Route Markers	48"
Rectangles	48"
Diamonds	48"
Triangles	48"
Rounds and Octagons	48"

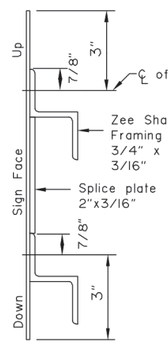
Install wind framing on all signs that exceed the dimensions listed.

LIGHT SIGNS

WIND FRAMING LOCATIONS



RIVET DETAIL FOR ZEE SHAPED WIND FRAMING & SPLICE PLATE



SECTION A-A

Note: Drawing not to scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN

SIGN FRAMING

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review By: WTH Date: 7/8/2020

Next Code and Standards Review date: 7/8/2030

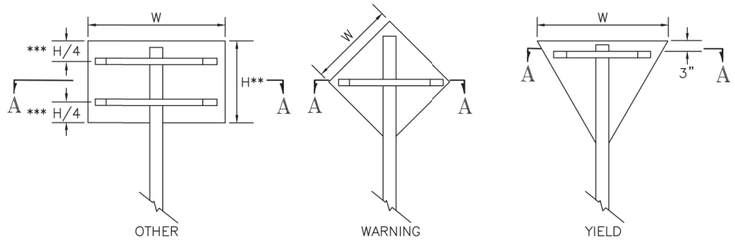
STANDARD PLAN
S-00.12

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans-S-00.12 Fri, Mar/11/22 09:38am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V17	V20

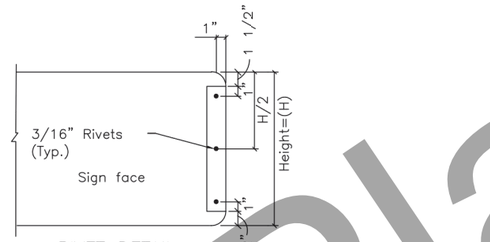
S-01.02 SHEET 1 of 1



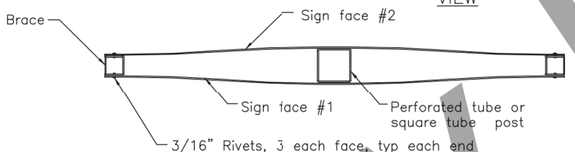
*** Use one brace when H ≤ 18"
Use two braces when 18"< H < 48"
Use three braces when H ≥ 48"

** Position of brace may be varied to match Predrilled mounting holes in panel

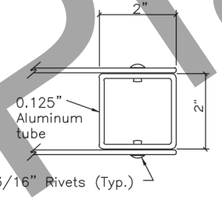
SIGN BRACING PLACEMENT



RIVET DETAIL ELEVATION VIEW

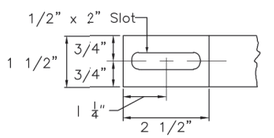


PLAN VIEW

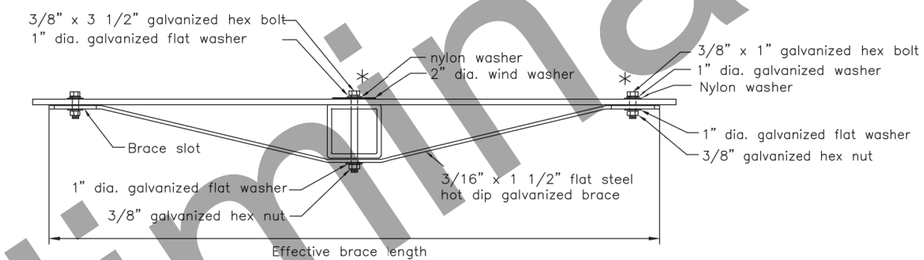


END BRACE DETAIL

SMALL STREET NAME SIGN (D3-1, D3-1A, D3-1D) BRACING DETAILS



DETAIL OF BRACE SLOT
Elevation view



TUBE POST SIGN BRACING SECTION A-A
Plan view

* Adjust location of bracing so that bolts and washers will miss the sign legend

Sign Width(W)	Effective Brace Length		
	Warning	Yield	Other
30"	36"	24"	24"
36"	42"	30"	30"
42"	48"	–	36"
48"	Two posts	36"	42"

< 30" No bracing required ard use square tube

Note: Drawing not to scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN

BRACING FOR SIGNS MOUNTED ON SINGLE POST

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: WTH Date: 7/8/2020

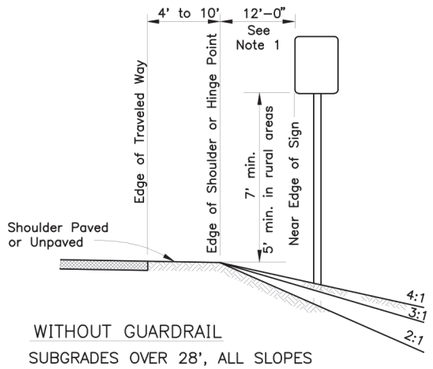
Next Code and Standards Review date: 7/8/2030

STANDARD PLAN
S-01.02

NO.	DATE	REVISION

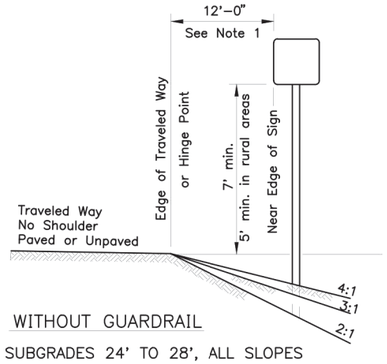
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V18	V20

S-05.02 SHEET 1 of 1



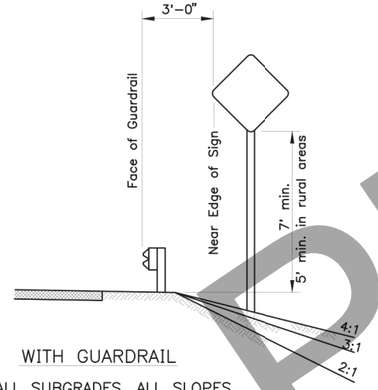
WITHOUT GUARDRAIL

SUBGRADES OVER 28', ALL SLOPES



WITHOUT GUARDRAIL

SUBGRADES 24' TO 28', ALL SLOPES

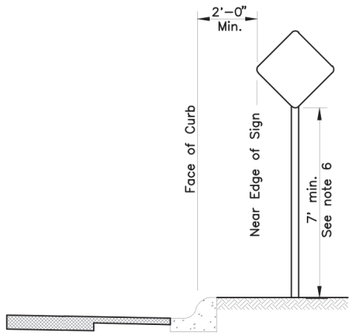


WITH GUARDRAIL

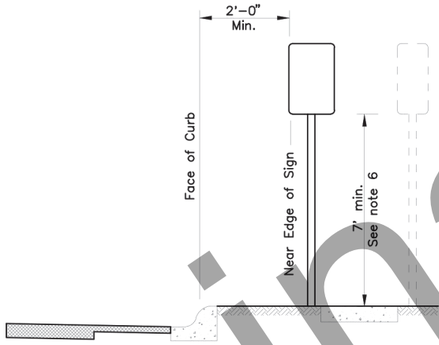
ALL SUBGRADES, ALL SLOPES

GENERAL NOTES

1. Unless shown otherwise on the plans, the standard sign offset is 12'. The minimum is 6' where shoulder width is 6' or greater.
2. Add 6" to mounting height on unpaved roads.
3. If signs extend over bike paths, the minimum vertical clearance is 8' 0".
4. When signs are placed 30' or more from the edge of traveled way, mount them with the bottom of the sign at least 5' above the road surface at the near edge of the road.
5. When multiple hinged sign supports are used, mount hinges at least 7' above the ground.
6. Minimum mounting height is 7'-0" where parking or pedestrian movements are likely to occur, or where sings extend over sidewalks.
7. For construction signs in rural areas, mounting height shall be 7' minimum.

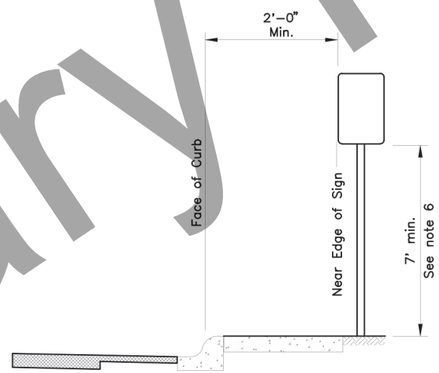


CURB WITHOUT SIDEWALK

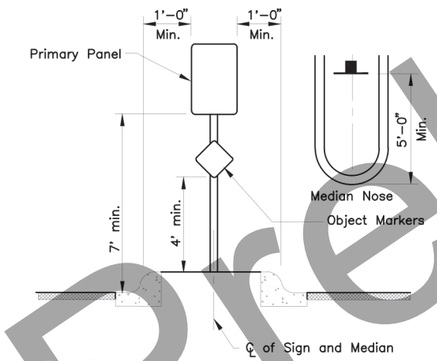


CURB WITH PARKWAY AND SIDEWALK

(If R/W width permits, signs should be placed behind sidewalk.)

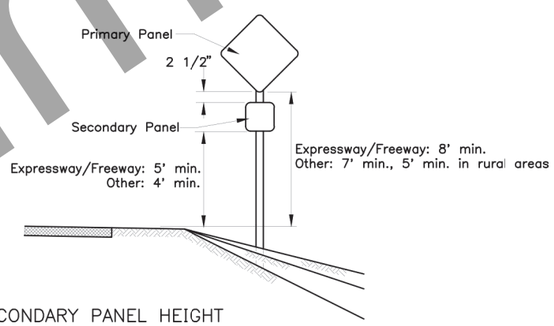


CURB WITH SIDEWALK WITHOUT PARKWAY



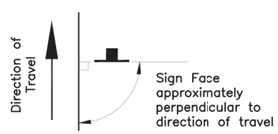
RAISED MEDIANS

Minimum 4' Width for Signing



SECONDARY PANEL HEIGHT

ALL TWO PANEL MOUNTING



SIGN POSITIONING

State of Alaska DOT&PF
ALASKA STANDARD PLAN

POST MOUNTED SIGN
OFFSET AND HEIGHT

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

STANDARD PLAN
S-05.02

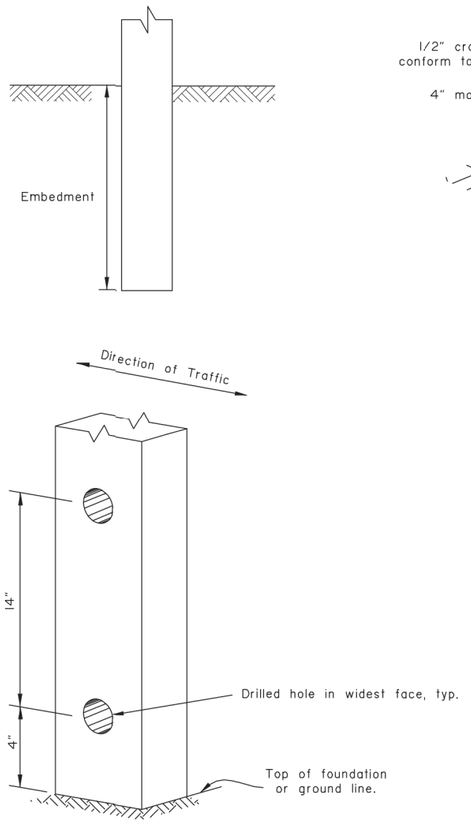
PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
C:\pwworking\west01\d0483589\63186_V_Standard Plans-S-05.02 Fri, Mar/11/22 09:38am

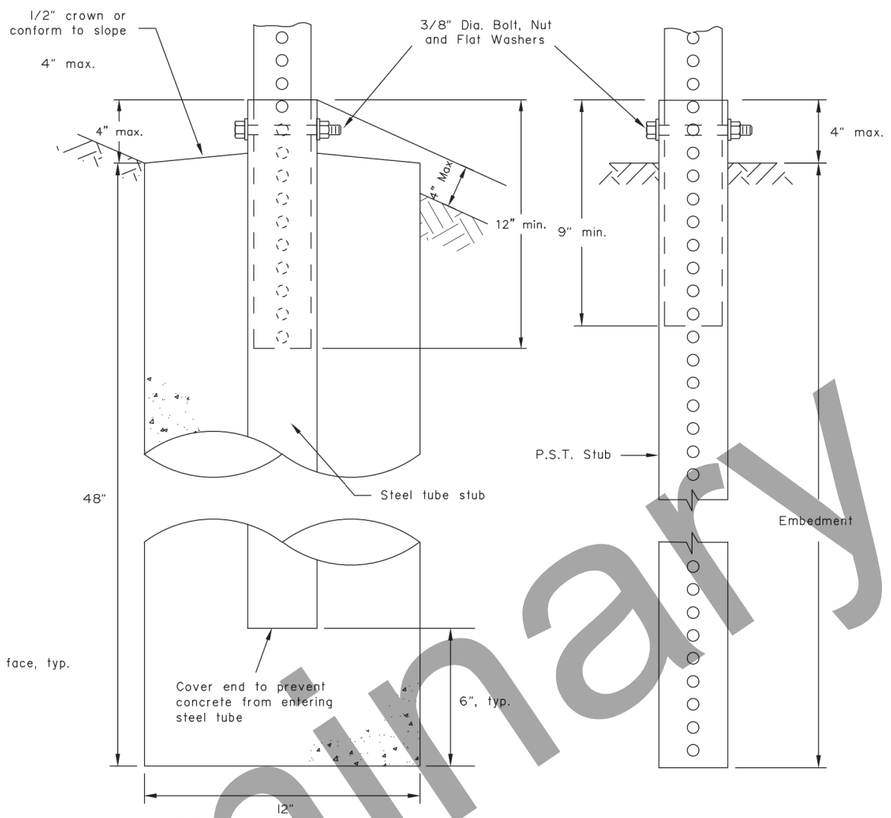
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V19	V20

S-30.05

SHEET 1 of 1





SLEEVE TYPE CONCRETE FOUNDATION

SLEEVE TYPE* SOIL EMBEDMENT

GENERAL NOTES:

1. Sign shall be placed symmetrically around posts and refer to Standard Plan S-00 for sign framing details.
2. See plans for type of post, size and embedment type.
3. To maintain crashworthiness, install no more than the number of P.S.T.s or wood posts specified in the tables within 7' of each other.
4. Concrete shall be class B.
5. Do not use the supports on this drawing for multiple support signs if supports are separated by more than 7 feet.
6. Treat all field cuts and field drilled holes in wood posts in accordance with Section 730-2.04 of the Standard Specifications.

SIGN POST SPACING NOTES:

1. Install sign support in accordance with the table below, unless otherwise required by plans or specifications.
2. Exceptions:
   a. Use one post for all E5-1 gore signs, regardless of width.
   b. Use one 2.5" P.S.T. for all STOP signs, with or without street name signs.
3. Supports placed within 7' of each other must be acceptable for that use. See tables below for the sizes of wood posts and P.S.T.s that may be used within 7'. See Manufacturer's documentation for breakaway couplings and tubes that may be used within 7'.
4. See Standard Plan S-31 for frangible couplings, hinges, and foundations for tube and W-shape sign supports.

WOOD SIGN POSTS			
SIZE	HOLE DIA.	EMBEDMENT*	NO. OF POSTS WITHIN 7 Ft. PATH
4"x4"	NONE	4'-1"	2
4"x6"	1 1/2"	5'-3"	2
6"x6"	1 1/2"	4'-9"	1
6"x8"	3"	4'-9"	1

* Embedment depth applies in both strong and weak soil.

WOOD POSTS

PERFORATED STEEL TUBES (P.S.T.)		
POST SIZE	Embedment Depth	No. of P.S.T.s permitted within 7 ft path
1 1/2" x 1 1/2"	4'-8"	2
1 3/4" x 1 3/4"	4'-6"	2
2" x 2"	4'-3"	2
2 1/4" x 2 1/4"	5'-0"	1
2 1/2" x 2 1/2"	4'-6"	1

* Use 3"x3"x3/16" Stub for 2 1/2"x2 1/2" PST Applications.

PERFORATED STEEL TUBE (PST) POSTS

TUBE SIGN POST SPACING								
Sign Width (feet)	No. of Posts	Distance Between Posts	Sign Overhang	Post Type				Notes
				P.S.T.	Wood	Steel Tube	W-Shape	
0.5 to 4.0	1	-	0.5W	X	X	X		See Note 2.
4.5 to 10.0	2	0.6W	0.2W	X	X	X		See Note 3.
10.5 to 11.0	2	6	Varies	X	X	X		See Note 3.
11.5 to 13.0	2	8	Varies				X	
13.5 to 20.0	2	0.6W	0.2W				X	
20.5 to 22.5	3	8	Varies				X	
23.0 to 29.5	3	0.35W	0.15W				X	
30.0 to 31.5	4	8	Varies				X	
32.0 to 40.0	4	0.25W	0.125W				X	

TUBE SIGN POST SPACING

Note: Drawing not to scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN

LIGHT SIGN STRUCTURE
POST EMBEDMENT

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: WTH Date: 7/8/2020

Next Code and Standards Review date: 7/8/2030

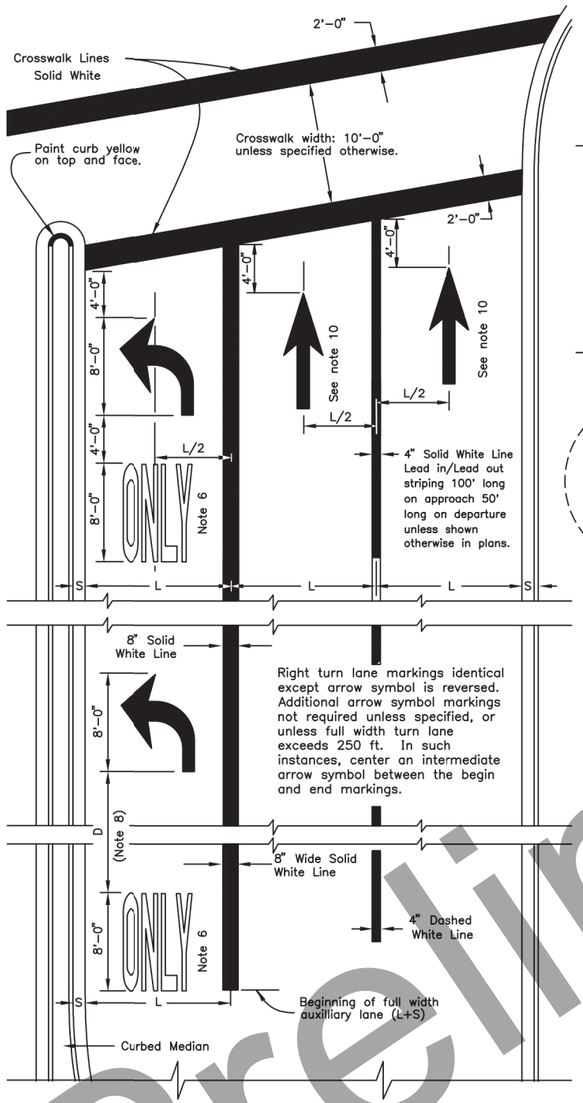
STANDARD PLAN
S-30.05

NO.	DATE	REVISION

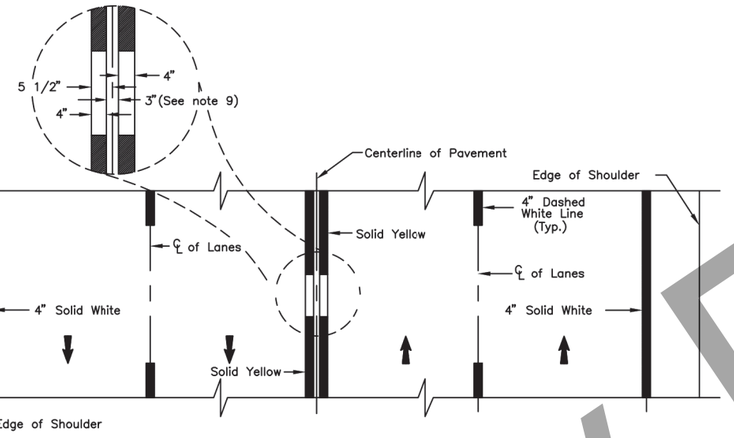
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0713010/Z631860000	2022	V20	V20

T-21.04

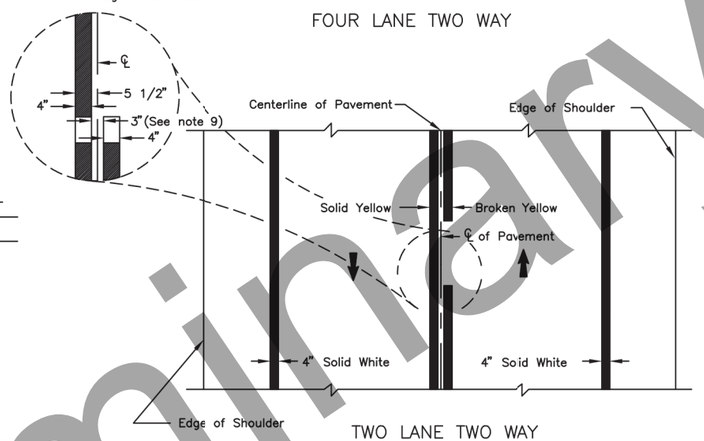
SHEET 1 of 1



APPROACH TO INTERSECTION



FOUR LANE TWO WAY



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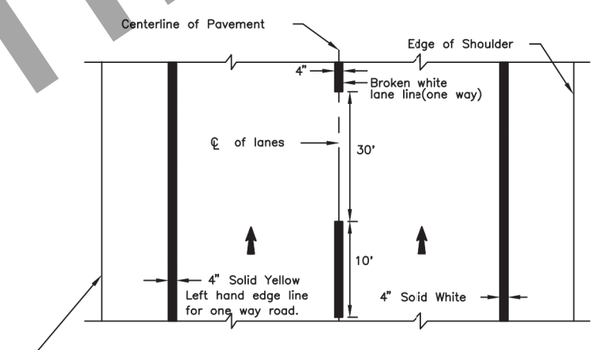
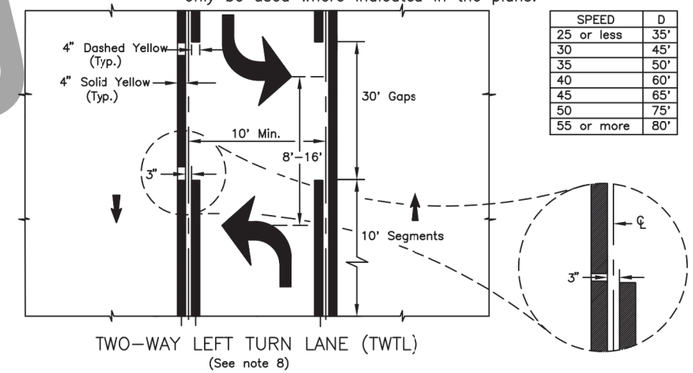
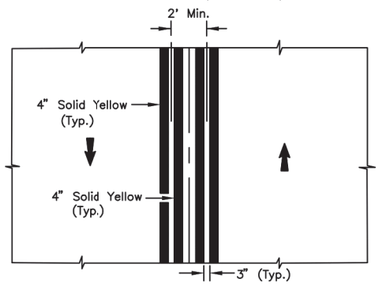


TWO LANE ONE WAY



TWO-WAY LEFT TURN LANE (TWTL)
(See note 8)

SPEED	D
25 or less	35'
30	45'
35	50'
40	60'
45	65'
50	75'
55 or more	80'



STRIPED MEDIAN

GENERAL NOTES:

1. All markings white unless indicated otherwise.
2. Lengths of stripe and gap for lane and center lines identical.
3. Lane lines for auxiliary lanes are unbroken solid lines.
4. "L" = driving lane width.
5. "S" = shy distance as shown on plans, otherwise 1 to 2 feet.
6. ONLY markings are required where through lanes change to turn lanes. In other cases, apply ONLY markings as indicated on plans.
7. See ALASKA TRAFFIC MANUAL for additional instruction on the use of TRAFFIC CONTROL DEVICES.
8. Adjust distance D between ONLY and Turn Arrow based on SPEED vs. D table. Table may be used for spacing between pairs of TWLT markings.
9. Adjust centerline spacing from 3" up to 5" where recessed pavement markers are required.
10. Arrows and symbols are used for through lanes only when the lane layout deviates from the normal intersection rules, and shall only be used where indicated in the plans.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PAVEMENT MARKING APPLICATIONS

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Lcst Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

STANDARD PLAN
T-21.04

PLANS DEVELOPED BY: HDR ENGINEERING INC, 582 EAST 36TH AVENUE SUITE 500, ANCHORAGE ALASKA, 99503, (907)644-2000 CERT. OF AUTH. NO. AECC569
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